

STATE OF CALIFORNIA

DEPARTMENT OF AGRICULTURE

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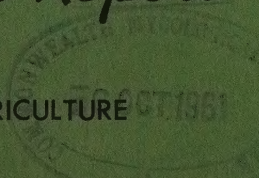
No. 2



Forty-First Annual Report

CHARLES PAUL, *Director*

CALIFORNIA DEPARTMENT OF AGRICULTURE



STATE OF CALIFORNIA
EDMUND G. BROWN, Governor
GLENN ANDERSON, Lieutenant Governor

QUARTERLY BULLETIN

Volume I Number 2

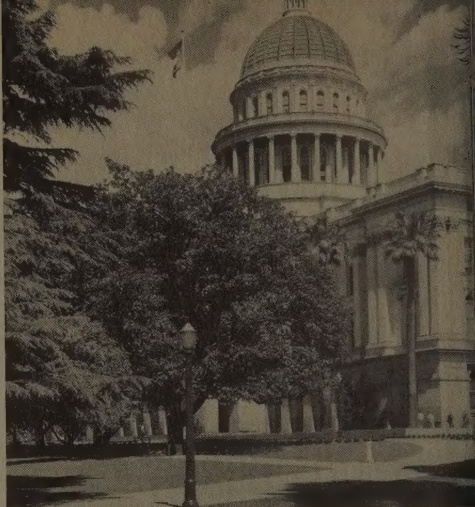
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OUR COVER: California cabbage field. In 1960, California ranked fourth in the nation as a cabbage-producing state. Production was 9.9 percent of the nation's total. Leading cabbage-producing counties are: Ventura, Imperial, Los Angeles, Monterey, Orange and San Diego.

The *Quarterly Bulletin*, published as a contribution to the welfare of California Agriculture, is mailed free to California citizens interested in the work of the Department of Agriculture. The *Bulletin* is exchanged, on request, for publications of the Federal Government, Experiment Stations, and other state or national agricultural offices or organizations.

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EDMUND G. BROWN
Governor of California

DIVISION OF ADMINISTRATION

RAYMOND S. LONG, *Chief*

The Division of Administration was established as an organization unit of the Department July 1, 1960. The position of Chief of the Division was filled shortly thereafter.

The Chief of the Division is responsible for advising the Director and Department on general administrative, personnel, financial and business policies.

The Division of Administration is responsible for the business management and administrative services of the Department, including the Personnel Office, departmental Accounting Office, and department Office Services section.

The Division of Administration is responsible to the Director's office for handling department studies of administration, organization and procedures.

A department-wide administrative study was started by the Department of Finance in early 1960 and concluded in the fall of 1960. This study covered the organization, policies, and programs of the Department of Agriculture. It was the first comprehensive study of this type in the Department in a number of years.

The study was carried on by the State Department of Finance, and its major recommendations were placed into effect within the Department in November and December of 1960. It is anticipated that the reorganization will be nearly complete by July 1, 1961.

The major recommendations adopted by the Department effecting its organization were:

(1)—Establishment of two staff functions and two additional line divisions.

(2)—Establishing the line divisions resulted from a grouping together of related programs and functions within the Department. New administrative organization reduced the number of levels of supervision and established the division as the strong administrative unit of the line operation rather than the bureau organization.

(3)—The management survey has been and is being extended throughout each bureau to improve the bureaus' organization and, wherever possible, reduce the number of levels of supervision within the bureaus.

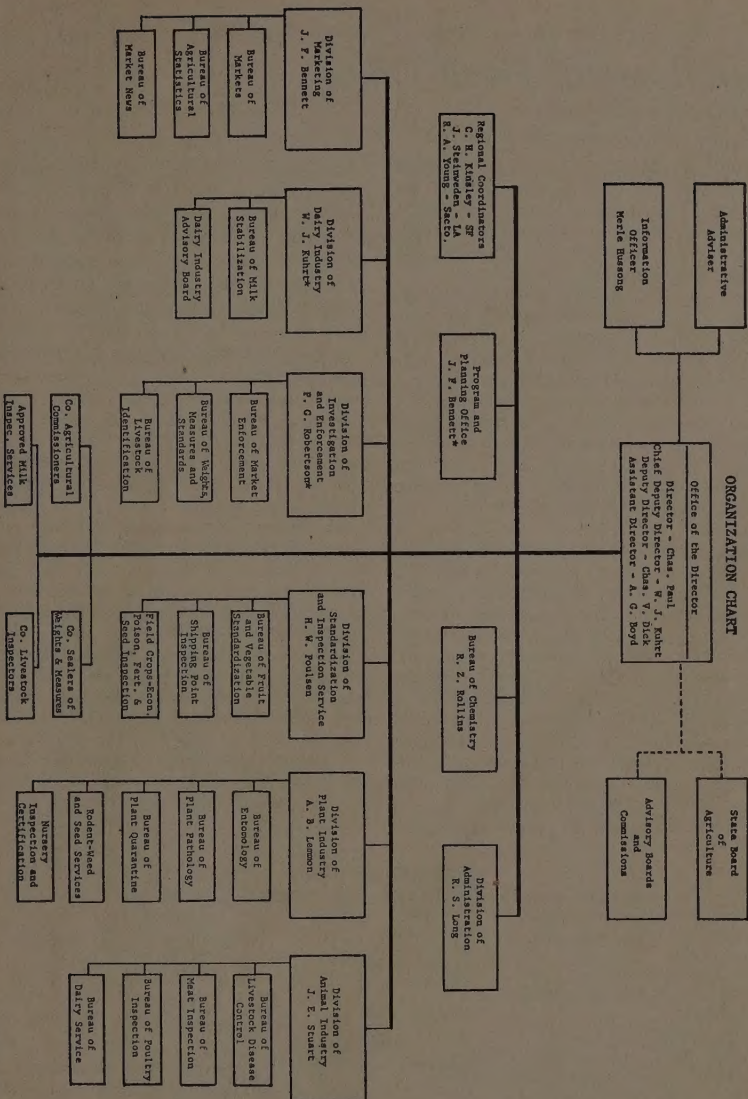
(4)—A detailed review was begun of the departmental accounting systems with special attention to the problem of accounting for special fund programs.

(5)—A departmental organization committee was appointed to review the recommendations of the division chiefs, bureau chiefs and appropriate staff officers and make recommendations to the Director for implementation of the necessary organization changes.

The present organization of the Department of Agriculture reflecting the changes during 1960 is shown on the California Department of Agriculture Organization chart.

DEPARTMENT OF AGRICULTURE

ORGANIZATION CHART



Departmental Fiscal Office

C. H. PERKINS, *Fiscal Officer*

MARIE GALLAGHER, *Assistant Fiscal Officer*

The Fiscal Office administers the financial and business affairs of the Department. Included are such items as budget preparation and control, automotive management, property inventory controls, internal audit, and building management.

Fiscal controls involve operation in connection with eight different funds. Included is the Department of Agriculture Fund, from which operate the various self-supporting functions of the Department. Although this fund is accounted through the regular fiscal control agencies as one fund, it requires the keeping of twenty-one sub-accounts in our records in order that the funds for each individual self-supporting function may be earmarked for their particular use.

Another fund peculiar to the Department is the "Department of Agriculture Building Fund." This fund was established by Chapter 11, Statutes of 1950, for the purpose of providing a method for investing surplus money in the Department of Agriculture Fund by using these moneys to construct a building for use of the Department. The Fiscal Office is responsible for the operation of the building, and is concerned with the collection of the monthly rentals, and repayment of the principle amount borrowed, together with interest earned on moneys invested.

An accounting function peculiar to this

Department is the Marketing Trust accounting, which involves collection and disbursement of about nine million dollars annually on behalf of industry self-help marketing programs. These funds are exempt from usual state controls such as Controller's audit, Board of Control Rules, and the usual budget procedures.

Automotive management involves the Department's fleet of 484 passenger cars and 73 trucks and pickups. These vehicles represent those required at remote locations not serviced by the State Pool. Total mileage driven by the Department in 1959-60 fiscal year was 11,206,781, including 1,859,534 miles of State Pool car use.

The balance of the regular activities of the Fiscal Office covers the usual business functions necessary in the operation of a large department, and consists of the handling of leases, contracts, purchases of supplies and equipment, and control of the property and equipment owned by the various functions. The Fiscal Office also acts as coordinating unit in the Department insofar as contacts with the other fiscal control agencies are concerned.

Following is a financial statement detailing appropriations, revenue and expenditures for the various funds administered by the Department.

FINANCIAL STATEMENT

Expenditures for the Fiscal Year July 1, 1959 to June 30, 1960

GENERAL FUND FUNCTIONS	Detail	Subtotals	Totals
DIVISION OF ADMINISTRATION		\$612,106.51	\$612,106.51
Administration	\$577,305.74		
Office Service Unit	34,800.77		
DIVISION OF PLANT INDUSTRY			2,897,644.87
Administration		20,700.71	
Bureau of Entomology		723,009.59	
General Entomology	361,503.20		
Destruction and Control of Beet Leafhoppers	195,024.82		
Mexican Fruit Fly Survey and Treatment	78,671.69		
Khapra Beetle Suppression	87,809.88		
Bureau of Plant Quarantine		1,338,539.43	
Bureau of Plant Pathology		252,594.80	
Bureau of Rodent and Weed Control and			
Seed Inspection		498,730.46	
Rodent and Weed Control	129,936.68		
Seed Inspection	134,244.98		
Predatory Animal Control	234,548.80		
Bureau of Chemistry		64,069.88	
Spray Residue and Injurious Materials			
Enforcement	64,069.88		

Expenditures for the Fiscal Year July 1, 1959 to June 30, 1960—Continued

	Detail	Subtotals	Totals
DIVISION OF ANIMAL INDUSTRY			
Administration		21,308.89	3,606,986.54
Bureau of Livestock Disease Control		1,979,518.56	
Field Services	1,562,804.82		
Livestock and Poultry Pathology Laboratories:			
Petaluma	77,246.22		
San Gabriel	77,918.35		
Fresno	94,130.25		
Sacramento	91,550.96		
Poultry Pathology Laboratories			
Turlock	47,461.13		
Lancaster	28,406.83		
Bureau of Dairy Service		184,704.48	
Bureau of Meat Inspection		1,047,163.01	
Bureau of Poultry Inspection		374,291.60	
			392,755.73
DIVISION OF MARKETING			
Administration		8,684.48	
General Marketing Service		292,567.48	
Bureau of Weights and Measures		91,503.77	
GENERAL FUND FUNCTIONS			
	Detail	Subtotals	Totals
DIVISION OF MARKETING SERVICES			
Administration		\$2,635.12	\$1,035,845.81
Bureau of Market News		624,830.03	
Bureau of Agricultural Statistics		110,886.88	
Bureau of Fruit and Vegetable Standardization		297,493.78	
Fruit and Vegetable Standardization	\$246,067.89		
Poultry Meat Standardization	51,425.89		
Subtotal—Support			\$8,545,339.46
LESS GENERAL FUND REIMBURSEMENTS			
Unscheduled Reimbursements		1,560.56	769,167.52
Administration	1.52		
Bureau of Entomology	53.77		
Bureau of Plant Quarantine	180.21		
Bureau of Chemistry	41.80		
Bureau of Livestock Disease Control	1,201.04		
Bureau of Dairy Service	6.00		
Bureau of Meat Inspection	21.44		
Bureau of Markets	21.06		
Bureau of Market News	33.72		
Appropriation Reimbursements		767,606.96	
Division of Administration	248,574.00		
Office Service Unit	35,564.86		
Central Supply	10,849.79		
Bureau of Entomology	5,000.00		
Bureau of Plant Quarantine	7,955.63		
Bureau of Rodent and Weed Control and Seed Inspection	29,432.92		
Bureau of Livestock Disease Control	69,624.56		
Bureau of Meat Inspection	96,125.02		
Bureau of Markets	236,096.24		
Bureau of Market News	21,727.96		
Bureau of Fruit and Vegetable Standardization	6,655.98		
Total—Support			\$7,776,171.94
			155,166.95
OTHER CURRENT EXPENSES			
Salaries of County Agricultural Commissioners		154,687.81	
Market News Service—Klamath Basin		479.14	
Total—General Fund (Excluding Capital Outlay)			\$7,931,338.89*

* Includes Accounts Payable \$355,327.14 and Accounts Receivable \$36,875.84.

Expenditures for the Fiscal Year July 1, 1959 to June 30, 1960—Continued

FAIR AND EXPOSITION FUND	Detail	Subtotals	Totals
Federal State Matched Funds—Marketing Projects			\$146,075.07
Bureau of Agricultural Statistics		\$68,644.60	
Bureau of Markets		24,748.32	
Bureau of Fruit and Vegetable Standardization		8,778.11	
Bureau of Plant Pathology		43,904.04	
LESS: AMOUNT PAYABLE BY FEDERAL GOVERNMENT		69,240.53	76,834.53
Retirement included in expenditures		7,594.00	
Federal	\$3,797.00		
State	3,797.00		
Total—Fair and Exposition Fund			\$69,240.54
DEPARTMENT OF AGRICULTURE FUND FUNCTIONS	Detail	Subtotals	Totals
DIVISION OF PLANT INDUSTRY			1,158,122.10
Bureau of Nursery Service		155,461.99	
Bureau of Field Crops		542,216.02	
Bureau of Chemistry		424,991.77	
Chemistry ¹	396,984.11		
Agricultural Pest Control Operators	28,007.66		
Bureau of Rodent and Weed Control and Seed Inspection		35,452.32	
Seed Testing and Certification Service	35,452.32		
DIVISION OF ANIMAL INDUSTRY			958,972.29
Bureau of Dairy Service		193,918.18	
Bureau of Livestock Identification		765,054.11	
DIVISION OF MARKETING			1,672,613.64
Bureau of Markets		13,641.67	
Bureau of Market Enforcement		313,937.33	
Bureau of Milk Stabilization		1,087,143.07	
Bureau of Weights and Measures		257,891.57	
Gasoline, Distillate and Oil Inspection and Antifreeze and Brakefluid Registration	172,850.45		
Public Weighmasters	85,041.12		
DIVISION OF MARKETING SERVICES			2,273,461.54
Bureau of Fruit and Vegetable Standardization		779,569.59	
Canning Tomato Inspection	696,150.40		
Seed Potato Certification	62,847.84		
Wine Grape Inspection	20,571.35		
Bureau of Shipping Point Inspection		1,493,891.95	
Subtotal—Support			\$6,063,169.57
LESS: DEPARTMENT OF AGRICULTURE FUND REIMBURSEMENTS			\$14,004.21
Unscheduled Reimbursements		\$739.40	
Bureau of Field Crops	\$91.31		
Bureau of Livestock Identification	131.93		
Bureau of Market Enforcement	82.06		
Bureau of Milk Stabilization	.35		
Bureau of Weights and Measures	17.36		
Bureau of Fruit and Vegetable Standardization			
Seed Potato Certification	75.63		
Bureau of Shipping Point Inspection	340.76		
Appropriation Reimbursements		13,264.81	
Unbudgeted Estimated Reimbursements—			
Livestock Identification	625.00		
Bureau of Livestock Identification	7,262.69		
Bureau of Milk Stabilization	2,117.12		
Bureau of Fruit and Vegetable Standardization			
Seed Potato Certification	3,260.00		
Total—Department of Agriculture Fund			\$6,049,165.36 ²

¹ Economic Poisons \$79,396.82, Fertilizing Materials \$317,587.29.

² Includes Accounts Payable \$236,083.59 and Accounts Receivable \$4,135.00.

Expenditures for the Fiscal Year July 1, 1959 to June 30, 1960—Continued

CAPITAL OUTLAY	Detail	Subtotals	Totals
GENERAL FUND			
Major Construction, Improvements and Equipment			\$402.21
Bureau of Plant Quarantine		\$402.21	
Truckee	\$402.21		
Minor Construction, Improvements, Repairs and Equipment			11,927.62
Division of Administration		27.62	
Minor Projects		11,900.00	
Acquisition of Site			3,150.39
Bureau of Plant Quarantine		3,150.39	
Twenty-nine Palms	3,150.39		
Subtotal—General Fund Capital Outlay			\$15,480.22
STATE CONSTRUCTION PROGRAM FUND			
Major Construction Improvements and Equipment			101,856.30
Bureau of Plant Quarantine		101,856.30	
Truckee	101,856.30		
Subtotal—State Construction Program Fund			\$101,856.30
CAPITAL OUTLAY			
MOTOR VEHICLES TRANSPORTATION TAX FUND			
Major Construction, Improvements and Equipment			286,200.01
Bureau of Plant Quarantine		286,200.01	
Blythe Station	286,200.01		
Subtotal—Motor Vehicle Transportation Tax Fund			\$286,200.01
GRAND TOTAL—DEPARTMENT OF AGRICULTURE CAPITAL OUTLAY			
			\$403,536.53

Revenue for the Fiscal Year July 1, 1959 to June 30, 1960

OTHER FUNDS	Detail	Total
DEPARTMENT OF AGRICULTURE TRUST ACCOUNT		
Dairy Trust	\$172,605.28	
California Crop Improvement	10,231.55	
Walnut Crop Survey	18,304.64	
STATE DAIRY PRODUCTS TRUST FUND		461,487.28
Fees	456,898.91	
Interest and Penalties	360.52	
Educational Supplies	4,227.85	
DEPARTMENT OF AGRICULTURE BUILDING FUND		180,537.64
Rental Income	180,505.64	
Miscellaneous Income	32.00	
GENERAL FUND		
DIVISION OF ADMINISTRATION	Detail	Subtotal
Miscellaneous Income	\$33.16	\$33.16
DIVISION OF PLANT INDUSTRY		4,088.70
Bureau of Entomology		60.57
Apiary Brand Registration Fees	37.50	
Miscellaneous Income	23.07	
Bureau of Plant Quarantine		174.93
Miscellaneous Income	174.93	
Bureau of Rodent and Weed Control		3,853.20
Nutria Permits	3,840.00	
Miscellaneous Income	13.20	

Revenue for the Fiscal Year July 1, 1959 to June 30, 1960—Continued

GENERAL FUND	Detail	Subtotal	Total
DIVISION OF ANIMAL INDUSTRY			123,814.61
Bureau of Livestock Disease Control		5,466.64	
Vesicular Exanthema Licenses	5,080.00		
Penalty	360.00		
Miscellaneous Income	26.64		
Bureau of Dairy Service		67,249.35	
Container Brand Renewal Fees	260.00		
Factory Licenses—Miscellaneous Dairy Pro-			
ucts	10,972.00		
Penalty	31.88		
Oleomargarine Licenses			
Bakery and Restaurant	2,754.00		
Manufacturers	1,200.00		
Wholesale	10,700.00		
Imitation Milk Licenses			
Manufacturers	500.00		
Retail	835.00		
Bakery and Restaurant	14.00		
Wholesale	900.00		
Imitation Cream Licenses			
Manufacturers	200.00		
Retail	55.00		
Bakery and Restaurant	100.00		
Imitation Ice Cream Licenses			
Manufacturers	2,700.00		
Retail	20,465.00		
Wholesale	7,350.00		
Samplers and Weighers Licenses	2,133.00		
Penalty	26.00		
Pasteurizer's Licenses	2,673.00		
Penalty	35.00		
Testers Licenses	887.00		
Penalty	2.00		
Technicians Licenses	162.00		
Modified Milk Licenses	800.00		
Diabetic and Diatetic Licenses	1,162.50		
Penalty	6.25		
Miscellaneous Income	325.72		
Bureau of Meat Inspection		29,338.62	
Foreign Cold Storage Meat Inspection			
Licenses	17,750.00		
Fees	11,588.62		
Bureau of Poultry Inspection		21,760.00	
Inspectors Application Fees	1,190.00		
Renewal Fees	4,145.00		
Poultry Plant Licenses	15,880.00		
Penalty	380.00		
Miscellaneous Income	165.00		
TOTAL—GENERAL FUND REVENUES			\$127,936.47

DEPARTMENT OF AGRICULTURE FUND	Detail	Subtotal	Subtotals by Bureaus	Total
DIVISION OF PLANT INDUSTRY				\$1,144,916.08
Nursery Service		\$144,382.22	\$144,382.22	
Nursery Licenses	\$120,330.00			
Restoration Fees	1,532.00			
Acreage Fees	3,000.75			
Psorosis Registration	112.50			
Strawberry Registration and Certification	9,457.45			
Grapevine Registration and Certification	2,483.50			
Cherry Registration and Certification	2,254.00			
Avocado Certification	115.00			
Garlic Certification	560.00			
Interest—Surplus Money Investment	3,303.02			
Miscellaneous Income	1,234.00			

Revenue for the Fiscal Year July 1, 1959 to June 30, 1960—Continued

DEPARTMENT OF AGRICULTURE FUND		Detail	Subtotal	Subtotals by Bureaus	Total
Bureau of Field Crops.....				558,385.42	
Field Crops Inspection.....			287,472.77		
Inspection Fees		284,075.54			
Samples Sold		1,142.00			
Miscellaneous		10.00			
Interest—Surplus Money Investment		2,245.23			
Warehouse Inspection			555.62		
Warehouse Inspection Fees-Licenses		505.00			
Interest—Surplus Money Investment		50.62			
Grain Warehouse Inspection.....			2,299.48		
Registration Fees		2,280.00			
Interest—Surplus Money Investment		19.48			
Commercial Feeding Stuffs Service.....			268,055.83		
Hazardous Remedy Licenses.....		9,315.00			
Penalty		250.00			
Livestock Remedy Registration.....		11,960.00			
Penalty		175.00			
Feeding Stuffs Licenses.....		13,475.00			
Penalty		690.00			
Tonnage Tax		228,702.52			
Tonnage Tax Penalty		1,048.93			
Miscellaneous Income		25.33			
Interest—Surplus Money Investment		2,355.68			
Cancelled Warrants		58.37			
Terminal Weighing			1.72		
Interest—Surplus Money Investment		1.72			
Bureau of Chemistry				409,503.47	
Economic Poisons Service.....			98,246.63		
Economic Poisons Licenses.....		65,868.00			
Penalty		415.20			
Analysis Fees		53.00			
Limited Use Registration.....		3,390.00			
Penalty		66.00			
Supplemental Brand Fees.....		26,733.00			
Miscellaneous		154.50			
Interest—Surplus Money Investment		1,566.93			
Fertilizing Materials Service.....			276,060.58		
Fertilizing Material Registration.....		23,400.00			
Penalty		95.00			
Fertilizer Salesman's Licenses.....		4,918.00			
Penalty		242.00			
Agricultural Mineral Registration.....		10,400.00			
Penalty		20.00			
Jobbers Licenses		275.00			
Penalty		12.00			
Agricultural Mineral Tonnage Tax.....		36,369.03			
Penalty		52.38			
Fertilizer Tonnage Tax		195,903.75			
Penalty		441.57			
Miscellaneous Income		156.00			
Interest—Surplus Money Investment		3,775.85			
Pest Control Operators.....			35,196.26		
Licenses		28,100.00			
Penalty		510.00			
Pilot's Certificates		6,155.00			
Miscellaneous Income		100.00			
Interest—Surplus Money Investment		331.26			
Bureau of Rodent and Weed Control and Seed Inspection.....			32,644.97	32,644.97	
Seed Testing and Certification Fees.....		32,518.70			
Interest—Surplus Money Investment.....		126.27			
DIVISION OF ANIMAL INDUSTRY.....					935,074.34
Bureau of Dairy Service.....			3,573.26	218,465.80	
Miscellaneous Income		739.25			
Interest—Surplus Money Investment.....		2,834.01			
Ice Cream Inspection.....			101,387.13		
Factory Licenses		100,243.82			
Penalty		1,143.31			

Revenue for the Fiscal Year July 1, 1959 to June 30, 1960—Continued

DEPARTMENT OF AGRICULTURE FUND	Detail	Subtotal	Subtotals by Bureaus	Total
Bureau of Dairy Service (Contd.)				
Butter Grading Service.....		19,210.72		
Graders Licenses	63.00			
Penalty	1.00			
Distributors Fees	144.25			
Penalty	8.00			
Cutting and Wrapping Fees	18,903.30			
Penalty	91.17			
Market Milk Inspection.....		91,245.01		
Producers and Distributors Inspection Fees	90,807.66			
Penalty	437.35			
Glassware Testing Service.....		3,049.68		
Fees	3,049.68			
Bureau of Livestock Identification.....		15,026.06	716,608.54	
Miscellaneous Income	352.19			
Proceeds from Estray Animals.....	8,512.70			
Cancelled Warrants	25.30			
Sale of Brand Books.....	73.00			
Interest—Surplus Money Investment	6,062.87			
Cattle Protection Service.....		700,756.98		
Hide and Brand Inspection Fees.....	624,187.98			
Brand Recording Fees	4,584.00			
Brand Reinstatement Fees	4,052.00			
Brand Renewal Fees 1 Year.....	44,826.00			
Multiple Year	6,422.00			
Duplicate Certificate Fees.....	21.00			
Brand Transfer Fees	1,070.00			
Slaughterers Licenses	13,665.00			
Penalty	694.00			
Public Cattle Sales Yard Licenses	1,000.00			
Penalty	235.00			
Horse and Sheep Protection.....		825.50		
Horse Transportation Licenses.....	84.00			
Slaughterers Licenses	700.00			
Penalty	41.50			
DIVISION OF MARKETING.....				1,761,555.68
Bureau of Markets.....			10,655.29	
Agricultural Producers Marketing Act Commission Allowance Prorate Fees	9,994.65	10,655.29		
Interest—Surplus Money Investment	660.64			
Bureau of Market Enforcement.....			250,755.64	
Producer Dealers Service.....		219,570.02		
Produce Dealers Licenses.....	146,880.00			
Penalty	1,620.00			
Brokers Licenses	13,400.00			
Commission Merchants Licenses.....	13,800.00			
Agents Licenses	12,120.00			
Cash Buyers Licenses	30,080.00			
Miscellaneous Income	1,670.02			
Processors of Farm Products.....		31,185.62		
Processors Licenses	23,520.00			
Penalty	80.00			
Agents Licenses	4,335.00			
Statement of Intention to Finance Fees	223.00			
Interest—Surplus Money Investment	3,027.62			
Bureau of Milk Stabilization.....		10,851.28	1,179,962.60	
Cancelled Warrants	83.80			
Interest—Surplus Money Investment	10,743.48			
Miscellaneous Income	24.00			
Fluid Milk and Cream Stabilization.....		853,903.59		
Distributor and Producer Assessments	842,888.59			
Distributors Licenses	6,165.00			
Penalty	261.00			
Civil Penalty	4,589.00			
Marketing of Milk and Other Dairy Products		160,656.07		
Ice Cream Manufacturer Assessments	160,656.07			

Revenue for the Fiscal Year July 1, 1959 to June 30, 1960—Continued

DEPARTMENT OF AGRICULTURE FUND	Detail	Subtotal	Subtotals by Bureaus	Total
Bureau of Dairy Service—Continued				
Fluid Milk and Cream Sales				
Stimulation		154,551.66		
San Diego Producer Assessments	56,513.85			
Interest—Surplus Money Investment	158.61			
Sacramento Producer Assessments	28,732.45			
Interest—Surplus Money Investment	106.84			
Alameda-Contra Costa Assessments	68,907.35			
Interest—Surplus Money Investment	132.56			
Bureau of Weights and Measures			320,182.15	
Gasoline, Distillate and Oil Inspection		221,799.62		
Motor Fuel Pump Licenses	206,098.00			
Anti-Freeze Registration Fees	4,050.00			
Penalty	30.00			
Brake Fluid Registration Fees	6,350.00			
Penalty	50.00			
Miscellaneous	309.96			
Interest—Surplus Money Investment	4,911.66			
Public Weighmasters		98,382.53		
Weighmasters Licenses	51,720.00			
Penalty	1,980.00			
Branch Location Licenses	8,075.00			
Penalty	205.00			
Deputy Weighmasters Licenses	34,464.00			
Penalty	592.00			
Miscellaneous	84.81			
Interest—Surplus Money Investment	1,261.72			
DIVISION OF MARKETING SERVICES				2,456,528.71
Bureau of Fruit and Vegetable				
Standardization			731,108.94	
Canning Tomato Inspection		634,567.88		
Inspection Fees	630,509.90			
Miscellaneous	22.74			
Interest—Surplus Money Investment	3,508.15			
Cancelled Warrants	527.09			
Seed Potato Certification		57,547.83		
Certification Fees	53,784.00			
Test Plot Fees	3,081.00			
Interest—Surplus Money Investment	682.83			
Wine Grape Inspection		38,993.23		
Inspection Fees	21,892.86			
Interest—Surplus Money Investment	100.37			
Deposit for Inspection	17,000.00			
Bureau of Shipping Point Inspection		1,725,419.77	1,725,419.77	
Inspection Fees	1,718,325.57			
Interest—Surplus Money Investment	7,094.20			
TOTAL—REVENUE FOR DEPARTMENT OF AGRICULTURE FUND				\$6,298,074.81

Interfund Interest Receipts July 1, 1959 to June 30, 1960

BUILDING FUND LOAN INTEREST

DEPARTMENT OF AGRICULTURE FUND	Detail	Subtotal	Total
DIVISION OF PLANT INDUSTRY			\$12,353.13
Bureau of Nursery Service	\$2,959.83	\$2,959.83	
Bureau of Field Crops		4,194.21	
Field Crops Inspection	2,011.48		
Bonded Warehouse Inspection	44.78		
Grain Warehouse Inspection	17.38		
Commercial Feeding Stuffs	2,119.03		
Terminal Weighing Service	1.54		
Bureau of Rodent and Weed Control and Seed Inspection	112.72	112.72	
Bureau of Chemistry		5,086.37	
Economic Poisons Service	1,404.15		
Fertilizing Materials Service	3,383.16		
Pest Control Operators	299.06		
DIVISION OF ANIMAL INDUSTRY			7,993.33
Bureau of Dairy Service	2,552.25	2,552.25	
Bureau of Livestock Identification	5,441.08	5,441.08	

Interfund Interest Receipts July 1, 1959 to June 30, 1960

DEPARTMENT OF AGRICULTURE FUND	Detail	Subtotal	Total
DIVISION OF MARKETING.....			18,846.73
Bureau of Markets.....		592.92	
Agricultural Marketing Act.....	592.92		
Bureau of Market Enforcement.....	2,712.10	2,712.10	
Bureau of Milk Stabilization.....	9,643.33	10,005.54	
San Diego Trade Stimulation.....	146.13		
Sacramento Trade Stimulation.....	96.72		
Alameda-Contra Costa Trade Stimulation.....	119.36		
Bureau of Weights and Measures.....		5,536.17	
Gas and Oil.....	4,406.08		
Public Weighmasters.....	1,130.09		
DIVISION OF MARKETING SERVICES.....			10,218.84
Bureau of Fruit and Vegetable Standardization.....		3,845.49	
Canning Tomato Inspection.....	3,144.42		
Seed Potato Certification.....	611.76		
Wine Grape Inspection.....	89.31		
Bureau of Shipping Point Inspection.....	6,373.35	6,373.35	
TOTAL—INTERFUND INTEREST RECEIPTS.....			\$49,412.03

Department of Agriculture Building Fund for the Fiscal Year July 1, 1959 to June 30, 1960

Balance Forwarded from 1958-59 Fiscal Year.....		\$12,133.43
Additions:		
Additional 1958-59 Collections.....	\$60.00	
1959-60 Rental Income.....	180,445.64	
1959-60 Miscellaneous Income.....	32.00	
Transfers from Department of Agriculture Fund.....	50,000.00	
Total Additions		230,537.64
Deductions:		
Transfers to Architecture Revolving Fund.....	\$50,000.00	
Expenditures:		
Operating.....	128,112.07	
Additions to Annex.....	70.45	
Greenhouse.....	101.08	
Total Deductions		178,283.60
Balance as of June 30, 1960.....		\$64,387.47

NOTE: Return of \$50,000.00 principal requested but not covered until August, 1960.

Appropriations from General Fund for the Fiscal Year July 1, 1959 to June 30, 1960

CURRENT FISCAL YEAR APPROPRIATIONS

	Balance as of 6/30/59	Available	Less Actual Expenditures	Less Accounts Payable	Add Accounts Receivable	Balance per Budget Report	Items in Transit	Balance per Controller 6/30/60
Support—Department of Agriculture Ch. 1300/59, Item 34, 1959-60 F. Y.		\$8,757,868.00						
Augmented by Executive Order No. E. 60-113		200,000.00	\$8,235,123.32	\$312,616.14	\$2,400.00			
Reimbursements		—736,227.00	—734,691.68		34,475.84			
Unallocated Reduction		—100,000.00						
Salaries of County Agricultural Com- missioners, Ch. 1300/59, Item 412, 1959-60 F. Y.		8,121,641.00	7,500,431.64	312,616.14	36,875.84	\$345,469.06	\$159,281.59	\$504,750.65
Capital Outlay—Department of Agri- culture, Ch. 1300/59, Item 279, 1959-60 F. Y.		162,000.00	111,976.81	42,711.00		7,312.19	42,711.00	50,023.19
Minor Projects A		15,000.00	11,900.00			3,100.00		3,100.00

PRIOR FISCAL YEAR APPROPRIATIONS

	Balance as of 6/30/59	Available	Add Prior Year Accounts Payable	Less Prior Year Accounts Receivable	Less Actual Prior Year Expenditures	Add Actual Prior Year Reimbursements	Items in Transit	Balance per Controller 6/30/60
Support—Department of Agriculture, Ch. 1/58, Item 34, 1958-59 F. Y.	\$405,076.08		\$272,151.98	\$36,568.08	\$252,565.00	\$37,910.41	\$1,731.62	\$427,737.01
Salaries of County Agricultural Com- missioners, Ch. 1/58, 2 ES, Item 452, 1958-59 F. Y.	3,156.00		36,441.00		36,201.00			3,396.00
Support—Department of Agriculture, Ch. 600/57, Item 37, 1957-58 F. Y.	229,991.46				21.48			229,969.98
Augmented by Ch. 2289/57	68,249.00							68,249.00
Federal Cooperative Marketing Re- search, Ch. 600/57, Item 38, 1957- 58 F. Y.	14,678.20							14,678.20
Salaries of County Agricultural Com- missioners, Ch. 600/57, Item 441, 1957-58 F. Y.	642.94			8.33		303.01		954.28

Appropriations from General Fund for the Fiscal Year July 1, 1959 to June 30, 1960—Continued

PRIOR FISCAL YEAR APPROPRIATIONS—Continued

	Balance as of 6/30/59	Available	Add Prior Year Accounts Payable	Less Prior Year Accounts Receivable	Less Actual Prior Year Expenditures	Add Actual Prior Year Reimbursements	Items in Transit	Balance per Controller 6/30/60
Bovine Brucellosis Control, Ch. 1023/57, 1957-58 F. Y.	203,785.85							203,785.85 ¹
Market News Service, Klamath Basin, Ch. 1473/57, 1957-58 F. Y.	6,000.00				479.14			5,520.86
Major Construction, Improvements and Equipment, Ch. 1/58, 2 ES, Item 276.1, 1957-58 F. Y. Plant Quar- antine Station—Blythe	\$8,400.00							\$8,400.00
Acquisition of Real Property, Ch. 1/58, 2 ES, Item 274, 1958-59 F. Y.	2,939.36	414.06			3,150.39			203.03
Twenty-nine Palms Augmented by E. O. # E 59-100								
Equipment, Plant Quarantine Station, Ch. 1/58, 2 ES, 1958-59 F. Y.	750.00							750.00
Item 276A—Twenty-nine Palms	750.00				402.21			347.79
Item 276B—Truckee								
Minor Construction, Improvements, Re- pairs and Equipment, Ch. 600/57, Item 286, 1957-58 F. Y. Fresno Lab- oratory	133.64							133.64
Acquisition of Real Property, Ch. 777/55, Item 277, 1955-56 F. Y.								
Bureau of Plant Quarantine—Benton Station	—503.64							
Bureau of Fruit and Vegetable Stand- ardization—Carpenteria Station								
Major Construction, Improvements and Equipment, Ch. 777/55, Item 278a, 1955-56 F. Y.	504.51		3,051.00		3,051.00			.87
Bureau of Plant Quarantine, Benton Station	\$3,546.56							\$3,546.56 ¹
Major Construction, Improvements, Re- pairs and Equipment, Ch. 1/56, Item 291, 1956-57 F. Y.								
Departmental Administration	133.02							105.40

Note: Capital Outlay and Savings Fund was discontinued 7-14-59. All remaining balances transferred to General Fund.

¹ Balance reverted in 1959-60 F. Y.

² Period of Availability for Ch. 2289/57 is 3 years.

Appropriations from Fair and Exposition Fund for the Fiscal Year

July 1, 1959 to June 30, 1960

CURRENT FISCAL YEAR APPROPRIATIONS

Balance as of 6/30/59	Available	Less Actual Expenditures	Less Accounts Payable	Add Accounts Receivable	Balance per Budget Report	Items in Transit	Balance per Controller 6/30/60
Co-operation with Federal Government in Marketing Research, Ch. 1300/59, Item 37, 1959-60 F. Y.	\$72,500.00	\$70,252.10	\$4,692.96	\$5,704.52	\$3,259.46	—\$1,750.11	\$1,509.35

PRIOR FISCAL YEAR APPROPRIATIONS

Balance as of 6/30/59	Available	Add Prior Year Accounts Payable	Less Actual Prior Year Accounts Receivable	Less Actual Prior Year Expenditures	Add Actual Prior Year Reimbursements	Items in Transit	Balance per Controller 6/30/60
Co-operation with Federal Government in Marketing Research, Ch. 1/58, 2 ES, Item 35, 1958-59 F. Y.	\$5,067.74	\$3,483.83	\$1,741.92	\$2,829.32	\$1,414.67		\$5,395.00
Construction and Equipment Executive Order—#D-584, Ch. 777/55, Item 399, Sacramento Laboratory.....	13,220.00						13,220.00

Other Capital Outlay Appropriations for the Fiscal Year

July 1, 1959 to June 30, 1960

Balance as of 6/30/59	Available	Add Prior Year Accts. Payable	Less Actual Expenditures	Balance per Budget Report	Items in Transit	Balance per Controller 6/30/60
STATE CONSTRUCTION PROGRAM FUND						
Major Construction, Improvements and Equipment, Ch. 1/58, 2 ES, Item 275, Construct Plant Quarantine Stations, Twentynine Palms-Truckee	103,800.00		101,856.30	1,943.70	99,616.17	101,559.87
MOTOR VEHICLE TRANSPORTATION TAX FUND						
Major Construction, Improvements and Equipment, Ch. 1/58, 2 ES, Item 276.2, Augmented by Executive Order #D59-2, Plant Quarantine Station—Blythe	291,160.00	18,000.00	304,200.01	4,959.99	304,200.01	309,160.00

**Appropriations from the Department of Agriculture Fund for the Fiscal Year
July 1, 1959 to June 30, 1960**

CURRENT FISCAL YEAR APPROPRIATIONS

	Balance as of 6/30/59	Available	Less Actual Expenditures	Less Accounts Payable	Add Accounts Receivable	Balance per Budget Report	Items in Transit	Balance per Controller 6/30/60
Support—Department of Agriculture, Ch. 1300/59, Item 36, 1959-60 F. Y.	\$6,340,658.00							
Anticipated by:								
Executive Order #D-59-85	151,520.00							
Executive Order #D-59-127	218,589.00							
	6,710,767.00		5,830,810.98	236,083.59	3,725.00			
	— 10,090.00		— 13,594.21		410.00			
Reimbursements	\$6,700,677.00		\$5,817,216.77	\$236,083.59	\$4,135.00	\$651,511.64	\$222,090.22	\$873,601.86

PRIOR FISCAL YEAR APPROPRIATIONS

	Balance as of 6/30/59	Available	Add Prior Year Accounts Payable	Less Prior Year Accounts Receivable	Less Actual Prior Year Expenditures	Add Actual Prior Year Reimbursements	Items in Transit	Balance per Controller 6/30/60
Support—Department of Agriculture, Ch. 1/58, 2 ES, Item 36, 1958-59 F. Y.	432,356.97			2,190.27	271,244.68	1,370.33	—6,520.29	497,269.51
Support—Department of Agriculture, Ch. 600/57, Item 39, 1957-58 F. Y. Refunds to Reverted Appropriations:	445,645.12				114.96		2,972.99 ^a	448,503.15 ¹
Support—Department of Agriculture, Ch. 1/54, Item 42, 1954-55 F. Y.							— 154.79	

¹ Unexpended Appropriation Balance Reverted by Controller.

^a Amount in transit 6/30/59.

Statement of Revenue and Expenditures for the Fiscal Year July 1, 1959 of June 30, 1960

Trans. by Controller
to State

	Balance as of 6/30/59	Collections	Other Items ¹	Expenditures 7/1/59 6/30/60	Prior Year Expenditures	Employees' Retirement Fund	Balance as of 6/30/60
DEPARTMENT OF AGRICULTURE FUND							
Bureau of Nursery Service	\$283,626.24	1959-60 \$68,173.80	\$1,259.95	\$151,223.02	\$4,424.04	\$8,959.15	\$268,761.78
Bonded Warehouse Inspection	6,211.19	581.60	{ 29.47 } --6,020.16 ²	5.73	2.45	.22	793.70
Terminal Weighing Service	134.75	1.61	.67	1.39			135.64
Grain Warehouse Inspection	19.87	2,302.58	2.80	1,662.92	39.72	96.36	526.25
Field Crops Inspection	178,585.10	287,583.04	1,032.28	307,109.18	17,662.82	17,174.80	125,253.62
Commercial Feeding Stuffs Service	148,583.10	267,685.24	907.41	217,931.61	5,319.12	12,229.47	190,355.55
Seed Testing and Certification	8,562.14	32,664.42	50.62	32,765.56	2,360.90	2,191.68	3,959.04
Economic Poisons Service	99,327.52	79,727.72	486.10	78,407.05	1,871.68	4,616.15	112,700.26
Fertilizing Materials Service	305,549.79	268,980.09	1,635.50	313,628.09	7,486.60	18,464.39	241,786.30
Agric. Pest Control Operators	22,717.04	35,106.58	126.80	27,206.83	989.44	1,673.42	28,080.73
Bureau of Dairy Service	194,584.15	217,964.30	957.69	152,489.24	4,762.24	9,396.73	246,857.93
Bureau of Livestock Identification	540,678.52	716,337.15	10,797.64	748,435.26	24,697.66	44,355.44	452,526.96
Agricultural Producers Marketing Act	51,573.09	10,625.69	268.57	11,643.76	2,361.41	861.26	47,600.92
Bureau of Market Enforcement	274,419.09	250,839.24	1,512.66	306,437.02	10,274.64	17,044.42	193,014.91
Bureau of Milk Stabilization	845,838.12	1,179,196.27	6,256.12	1,032,462.53	50,835.48	52,140.00	856,178.46
Milk Stabilization				36,529.69	690.52	2,553.45	
Dairy Service							
Gasoline, Distillate and Oil Inspection,							
Antifreeze and Brake Fluid Reg.	392,615.98	97,010.54	1,628.00	167,903.75	5,541.60	9,499.00	440,706.67
Public Weighmasters	92,490.09	59,926.37	397.08	81,587.37	3,900.59	4,357.72	103,572.86
Canning Tomato Inspection	306,449.06	634,584.91	1,828.66	683,922.17	16,801.14	9,136.07	233,003.25
Seed Potato Certification	43,731.71	57,562.77	3,601.54	60,451.53	2,762.38	3,256.66	38,425.45
Wine Grape Inspection		39,021.72		20,087.41		232.64	18,701.67
Bureau of Shipping Point Inspection	461,181.81	1,724,826.96	2,254.68	1,399,796.54	107,039.49	56,706.99	632,412.26
Transfer to Department of Agriculture Building Fund Ch. 11/50	\$4,256,878.16	\$6,030,712.60	\$29,014.08	\$5,831,687.65	\$269,823.92	\$274,946.02	\$4,235,354.21
			--50,000.00				--2,006,168.00
	\$2,300,710.16	\$6,030,712.60	--\$20,985.92	\$5,831,687.65	\$269,823.92	\$274,946.02	\$2,229,186.21

¹ See Detail Schedules for: Surplus Money Interest, \$20,720.63; Appropriation Reimbursements, \$13,446.13; Unscheduled Reimbursements, \$867.44.

² Loan Payment.

**Statement of Revenue and Expenditures for the Fiscal Year
July 1, 1959 to June 30, 1960—Continued**

	Balance as of 6/30/59	Collections	Unscheduled Reimbursements	Current year Expenditures Advisory Board	Prior Year Expenditures Advisory Board	Dept. of Agriculture	Transfer to Employees' Retirement System	Balance as of 6/30/60
CALIFORNIA DAIRY INDUSTRY AD- VISORY BOARD Section 746.3— Agricultural Code	\$262,728.01	\$461,487.28	\$640.93	\$397,200.04	\$51,834.99	\$11,237.15	\$5,290.04	\$256,913.00

California Marketing Act and Agricultural Producers Marketing Act for the Fiscal Year July 1, 1959 to June 30, 1960

	Balance as of June 30, 1959	Collections	Refunds	Distribution of proceeds	Agriculture Promote Advisory Commission fees	Expenditures	Other items	Balance as of June 30, 1960
CALIFORNIA MARKETING ACT								
Fresh Bartlett Pears.....	\$27,928.92	\$31,752.29	\$117.80			\$31,557.27	\$1,101.60 b-275.00	\$29,107.74
Canning and Processing Cling Peaches.....	404,684.18	2,701,759.84	41,741.73			2,870,867.47	\$32,625.00 a-7,706.75	308,478.97
Unclaimed Checks Cling Peach Crop Survey.....	4,407.66					1,073.43	81.12	3.60
Surplus Diversion Stabilization Fund.....		1,884,545.25	304,335.42	1,671,511.97			\$7,706.75 a16,624.39	2,795.35
Dates.....	288.42					65.00		223.42
Substandard Date Pool.....	8.78							8.78
Wine.....	458,953.46	2,168,760.93	8,444.47			2,301,912.08	\$650.00 911,330.75	329,338.59
Wine Institute Aerial Survey.....		2,350.00				1,632.74		717.26
Grape Crop Survey.....	20,729.86	12,520.50	1,479.49			28,525.38	782.50	3,327.99
Grapefruit Administration.....	13,605.60	52,760.79	2,614.42			25,685.12	\$392.04	39,260.49
Grapefruit Advertising.....	924.87					11.50	\$30.36	943.53
Fresh Pail and Winter Pears Administration.....	3,506.63	5,192.30				4,493.03	\$124.90	4,330.80
Sales Promotion.....	11,941.44	32,936.03	918.79			28,846.43	\$707.73	15,819.98
Canning Pail and Winter Pears.....	10,543.36	22,467.88				24,999.30	\$429.06	8,441.90
Dry Pack Lettuce.....	6,433.44	20,446.48	12.13			27,979.69	\$240.82	8,128.92
Dried Figs Administration.....	21,723.11	30,434.05				45,849.61	\$937.42	16,244.97
Dried Figs Advertising.....	3,876.94					1,871.02	\$89.26	2,005.18
Substandard Fig Pool.....	34,956.21	88,505.27		92,223.55		21,225.29	\$1,500.00	11,512.64
Unclaimed Checks.....							\$20.94	20.94
California Canned and Green Olives Recovery of Money Due Growers.....	3,027.06	904.23					\$129.18	4,000.47
Coachella Valley Green Corn.....	1,040.46						\$34.58	1,075.04
Dried Prunes.....	510.27						\$15.31	525.58
	38,027.32	518,945.89	353.79			483,036.32	\$-300.00	77,251.34
Unclaimed Checks.....							\$5,458.21	
Early Apples.....	2,902.49					13,204.38	\$15.45	15.45
Wine Processors.....	1,635.16	12,430.19				2.53	\$82.38	120.68
Raisins.....	160,359.81	671,032.15	48.22			736,260.87	\$-800.00	1,632.63
							\$8,224.88	102,507.75
California Fresh Plums.....	4,397.61	55,811.30	12,044.83			38,408.22	\$-15.00	10,199.71
							\$548.85	

California Marketing Act and Agricultural Producers Marketing Act for the Fiscal Year July 1, 1959 to June 30, 1960—Continued

	Balance as of June 30, 1959	Collections	Refunds	Distribution of proceeds	Agriculture Prorate Advisory Commission fees	Expenditures	Other items	Balance as of June 30, 1960
CALIFORNIA MARKETING ACT								
—Continued								
Grape Stabilization.....	1,006.26					14	{ e—45.00 9778.64	1,006.12
California Fresh Peaches.....	3,643.55	102,589.15	838.73			99,859.42		6,268.19
Fresh Bartlett Pears—Sales Promotion.....	91,272.24	188,236.01	661.68			246,705.31		34,846.25
Lima Beans.....	40,425.34	27,057.46	9.17			36,643.61		32,000.51
Bedding Plants.....	256.12					65.00		191.12
Lemon Products.....	23,989.84	19,035.72				8,763.12	{ 9787.29 e—12.09	35,049.73
Lemon Crop Survey.....	15,273.91	19,767.09	3,516.74			30,416.48	{ 114.49 e—150.00	1,110.18
Turkey Promotion.....	92,495.86	236,251.75	20.08			245,302.12		86,787.73
Extracted Honey.....	35,593.68	42,337.66	51.45			33,351.27	{ 9,512.32 91,494.46	46,023.08
Long White Potatoes.....	66,265.93	3,721.50				41,481.15	{ 750.00 91,557.33	30,113.70
Delta White Potatoes.....	1,380.39	2,612.27				2,910.87	{ 936.64 9569.10	1,118.43
Fresh Asparagus.....	35,151.71	35,971.70	86.91			45,167.44	{ 75.51 e—25.00	26,438.16
Unclaimed Checks.....							{ 975.51 91,433.26	60,405.82
Processing Asparagus.....	79,325.77	63,013.11	59.40			83,281.92		
Unclaimed Checks.....							{ 933.51 9306.22	33.51
Bush Berries.....	9,871.59	21,899.07	418.27			25,242.57		6,416.04
Hardy Pears Promotion.....	9,894.47	13,825.75				18,091.61		6,097.68
California Strawberries.....	14,384.47	98,536.43	27.25			95,347.34	{ 7250.00 9717.20	18,513.51
Strawberry Crop Survey.....	960.44	2,000.00				1,042.99		1,917.45
Cantaloupes—Administration.....	9,599.70	56,402.36	141.20			65,257.48	{ 9477.35 91,381.54	1,040.73
Cantaloupes—Trade Stimulation.....		129,667.34				96,460.00		34,588.88
Cantaloupes—Processors Performance Bond.....		1,000.00	1,000.00					
Poultry and Turkey Improvement in California—Administration.....	22,514.86	55,639.10	142.80			61,217.50	{ 725.00 9995.00	17,813.66
Field Service.....	3,673.28	105,301.03	119.00			106,893.06	{ 9368.52	2,330.77

California Marketing Act and Agricultural Producers Marketing Act for the Fiscal Year July 1, 1959 to June 30, 1960—Continued

	Balance as of June 30, 1959	Collections	Refunds	Distribution of proceeds	Agriculture Prorate Advisory Commission fees	Expenditures	Other items	Balance as of June 30, 1960
CALIFORNIA MARKETING ACT								
—Continued								
California Canned Green and Ripe Olives—								
Administration-----	181,928.46	44,475.63	3,007.08			89,381.13	¹⁰ 128,353.97 ¹¹ 84.10 ⁹¹ 1,037.89 ¹¹ —84.10	7,733.90
Advertising-----		225,446.96	15,098.20			181,974.67	¹⁰ 128,353.97 ⁹ —1,200.00 ⁹⁶ 950.61 ¹³ —4,000.00 ¹²¹ 500.00	162,394.57
Olallie Berries-----	1,995.24	8,125.66	370.34			4,905.03	⁹³ 4.45 ⁹² 0.77 ⁹³ 82.46	2,379.98
Winter Head Lettuce-----	21,527.40	72,104.18	13,753.68			42,017.39		38,781.28
Summer Head Lettuce-----	120.20	134,184.90	4,590.65			103,472.38		28,624.53
Canning Tomato—Preliminary-----	3,500.00					3,500.00		
California Avocados-----		9,800.00				9,687.86	⁹¹ 3.60	125.74
California Beef Council-----	76,058.72	123,246.94	28.44			159,012.58	⁹¹ 275.42	41,540.06
Beef Council Gift Certificates-----		11,817.75	7,730.00					4,087.75
California Fish and Seafood—								
Preliminary-----		1,500.00				1,418.55		81.45
Proposed Marketing Order for Artichokes-----		1,200.00				975.08		224.92
Proposed Marketing Order for Processing Freestone Peaches-----		3,500.00				2,696.66		803.34
Proposed Marketing Order for Processing Strawberries-----		1,500.00				606.46		893.54
Proposed Marketing Order for Fresh Green Tomatoes-----		1,200.00						1,200.00
Marketing Trust Account-----	40.00	100,098.36				180.00	⁹ —99,878.36	80.00
Investment Earnings-----								
Totals, California Marketing Act	\$2,167,183.29	\$10,294,620.34	\$423,182.16	\$1,696,764.52		\$8,633,614.87	\$7,085.44	\$1,715,327.52

California Marketing Act and Agricultural Producers Marketing Act for the Fiscal Year July 1, 1959 to June 30, 1960—Continued

	Balance as of June 30, 1959	Collections	Refunds	Distribution of proceeds	Agriculture Prorate Advisory Commission fees	Expenditures	Other items	Balance as of June 30, 1960
AGRICULTURAL PRODUCERS MARKETING ACT								
Pear Crop Survey.....	28.97		14.48				1-14.49	
Unclaimed Checks.....	1.12						32.66	2.66
							2-1.12	
							2146.16	
Canning Bartlett Pear Zone No. 1.....	47,390.36	226,905.90			6,807.19	250,367.71	47,500.00	
Unclaimed Checks.....	146.16						91,001.51	
Canning Bartlett Pears—Trade Stimulation.....	113,007.38	266,948.43					2-146.16	
Brussel Sprouts.....	4,164.06	12,236.76			2,669.46	246,906.31	96,521.89	129,401.93
Brussel Sprouts—Trade Stimulation.....	6,042.13	20,061.14			367.10	9,962.00	4-7,500.00	6,223.56
Totals—Agricultural Producers Marketing Act.....	\$171,380.18	\$526,152.23	\$14.48		200.60	19,831.52	9123.74	6,794.89
Grand Total—Marketing Trust Account.....	\$2,338,563.47	\$10,820,772.57	\$423,196.64	\$1,696,764.52	\$10,044.35	\$527,067.54	\$7,786.03	\$168,192.07
					\$10,044.35	\$9,160,682.41	\$14,871.47	\$1,883,519.59

¹ AMA Funds Transferred to Lemon Crop Survey from Pear Crop Survey² Reverted unclaimed checks³ Unclaimed checks⁴ Trade stimulation prorate share of administrative expense⁵ Return correction⁶ Travel and revolving fund advances⁷ Return of travel advance⁸ Transferred to cling peach stabilization from canning and freezing cling peaches⁹ Marketing trust account investment earnings¹⁰ Establishment of separate cash controls for administration and advertising¹¹ Revenue correction¹² Bank loan¹³ Return of bank loan

Personnel Office

HARLES P. CUSICK, *Personnel Officer*

RANCIS G. STOFFELS, *Assistant Personnel Officer*

The Personnel Office, an agency of the Division of Administration, administers the personnel management program of the Department of Agriculture. This program includes classification of positions, recruitment of employees, various personnel transactions affecting an employee's career, personnel counseling, training activities, maintenance of employee personnel records, and time reporting.

The Office performs liaison work with all units of the State Personnel Board on personnel matters affecting the Department. In addition to the personnel management function, the Office provides other staff services, such as special studies, reports, and analyses for the Division of Administration and the Director of the Department of Agriculture.

One of the major activities of this office is the development and administration of certification examinations for the classifications of County Agricultural Commissioner, Deputy County Agricultural Commissioner, County Sealer of Weights and Measures, Deputy County Sealer, County Agricultural Inspector (8 categories), and Seasonal County Agricultural Inspector.

The Office prepares the examinations, conducts the tests and maintains an eligible list of persons who pass these examinations, and certifies their names to counties for consideration in making appointments to the positions of County Agricultural Commissioner and their staffs, and County Sealer of Weights and Measures, and their staffs.

The following table shows the results of examinations given during the year to qualify persons for employment in County Departments of Agriculture and County Departments of Weights and Measures:

Title of Examination		Number of Candi- dates	Suc- cessful	Unsuc- cessful
County Agricultural Commissioner	}	129	67	62
Deputy Agricultural Commissioner				
County Sealer of Weights and Measures	}	184	80	104
Deputy Sealer of Weights and Measures				
County Agricultural Inspector		495	270	225
Seasonal County Agricultural Inspector		225	190	35
		1033	607	426

The number of candidates examined this year compared with 1959 as follows:

	Total Candidates	Successful	Unsuccessful
1960	1033	607	426
1959	813	447	366

This represents an increase of 220 candidates over 1959.

Training Activities

During the year a training survey of the Department was conducted by the State Personnel Board with staff assistance from this office. Recommendations from the survey were received in October 1960, and several of the recommendations were put into effect before the end of the year, including changes in training organization.

In 1960, a start was made on a driver training program for all employees required to operate state automobiles as part of their work. Fourteen employees received training as instructors in driver training, four employees served on a faculty for statewide instructor driver training courses, and 40 employees received driver training. This program will be completed in 1961.

The Office assisted eight bureaus in planning seventeen formal training courses during the year.

Work Improvement Proposals and Merit Award Board Suggestions

Employees of the Department continued to submit suggestions for improvement of the work of the Department. During the year 32 Work Improvement Proposals and 50 Merit Award Board suggestions were submitted by employees of this Department. The following employees received recognition during the year for Work Improvement Proposals or Merit Award Board suggestions:

Work Improvement Proposals: C. E. Browning, Joseph D. Duncanson, Arthur H. Freeman, Thomas R. Haig, Jr., Frank Heigert, Florence E. Johnson, Chester A. Luhman, Esther Marturano, A. B. Olsen, Luella M. Pechnik, F. Gordon Roberts, Doris A. Schultze, Mrs. Gladys I. Swartz, Wendell C. Weaver, Albert L. Wehinger, Laurance B. Widmann, Martha Chan and Marian Messick and Willa May Lowary and Edythe Britton, James L. Ballard and Clyde O. Funderburg, J. L. Ballard and Albert L. Hanchett, Ronald M. Ireland and Edward B. Francis, Frank Quilici and John C. Lambert.

Merit Award Board Suggestions: G. E. Betcher, Jr., Marion C. Mattock, Gordon Roberts, Norman Smith, Mrs. Gladys I. Swartz.

Safety Activities

At the request of the Director of Agriculture, the Division of Industrial Safety, Department of Industrial Relations, made a safety check of facilities of the Department. As a result of this survey, considerable action was taken to correct unsafe conditions revealed in survey reports.

Retirements

Twenty-five employees, representing 554 years of State service, retired during the year. Twelve of these employees had twenty-five or more years of service. The employees who retired, and the bureaus and office in which they were employed follow:

Name	Bureau or Office	Years of Service
William R. Bernard	Livestock Identification	27
Edgar B. Kloth	Shipping Point Inspection	11
James E. Brenton	Weights and Measures	11
John L. Bird	Milk Stabilization	6
Carl L. Franzen	Shipping Point Inspection	28
Alyce T. Walker	Field Crops	32
James C. Harlan	Market Enforcement	26
O. L. Brannaman	Milk Stabilization	20
William J. Clements	Livestock Identification	33
Jack Avery	Chemistry	37
George E. Jacobsen	Shipping Point Inspection	11
Hazel Stidum	Canning Tomato	11
Richard T. Famariss	Livestock Identification	32
Loren Garrison	Livestock Identification	24
Ralph V. McCombs	Livestock Identification	4
Earl R. Wharton	Fiscal Office	12
Williams L. Williams	Market News	23
Alice M. O'Brien	Livestock Disease Control	42
Lola J. Wheaton	Market News	32
Robert H. Buffman	Plant Quarantine	31
Lola C. Neal	Market News	8
Alice B. Heater	Livestock Disease Control	7
Hazel L. Maas	Division of Animal Industry	38
Zilla I. Rosenblatt	Fiscal Office and Dairy Industry Advisory Board	12
Elden L. Stewart	Dairy Service	17

Miscellaneous Activities

During the year the Office assisted in a number of projects to assist the Director and the Division of Administration.

Organization charts were prepared, a written instruction system of notices, procedural circulars and policy letters was adopted.

Also prepared were official letters and certificates for members of Advisory Boards, Department committees and Councils appointed by the State Director of Agriculture.

The Office also prepared an age distribution chart, a procedure for exit interviews, a revised Departmental statement of activities considered incompatible. New identification cards were issued all employees. Congratulatory letters to employees advancing in the state service, creditable performances and retirement were prepared for the consideration of the Director. The procedure was revised for the examination of candidates for appointment as County Agricultural Commissioners and their assistants, and County Sealers of Weights and Measures, and their assistants. A new directory of employees was compiled. Assistance was also provided in programs relating to the recruitment of employees and retention of present employees.



Harvesting defoliated cotton—near Bakersfield.

DIVISION OF ANIMAL INDUSTRY

J. E. STUART, D.V.M., Chief

The Division of Animal Industry formerly was comprised of the Bureau of Dairy Service, Livestock Disease Control, Livestock Identification, Meat Inspection, and Poultry Inspection.

An important organizational change was made December 15, 1960, when the Bureau of Livestock Identification was separated from the Division and was incorporated into a new "Division of Investigation and Enforcement." Paul G. Robertson, former chief of the Bureau of Livestock Identification, became acting chief of the newly formed division.

The problem of contamination of livestock feeds, with accompanying adulteration of foods of animal origin with pesticide residues, climaxed during the year. The Bureau of Dairy Service contributed in an outstanding manner to a departmental program that succeeded in eliminating, for all practical purposes, any evidence of pesticide residues in the State's milk and milk products.

Three bureaus of the division cooperated with the State Department of Public Health in a program to collect samples of foods of animal origin to be tested for radiation.

Tissue culture techniques, set up during the year in the pathology laboratories, will improve the diagnostic services and benefit the producers of livestock and poultry.

Diseases imported, or likely to be imported, from other states and countries were of especial concern during the year. Several outbreaks of pullorum disease in chickens were the result of infected hatching eggs shipped to California from other states.

The Bureau of Livestock Disease Control performed an outstanding service in preventing cattle and sheep scabies from being introduced. Cattle scabies was introduced into several far western states during the year, sheep scabies into one western state, and, at the close of the year, 24 states were under California restriction because of sheep scabies.

The importation of about 50,000 sheep from Australia presented a special problem to the Bureau in preventing the distribution

of these sheep for breeding and feeding purposes, with possible exposure of California sheep to diseases prevalent in Australia. All of the animals were required to be slaughtered.

Considerable interest was expressed during the year by the Statewide Swine Disease Committee in the control or possible eradication of hog cholera and swine brucellosis. Increased interest in the status of these diseases may be expected. Also, there is expanding interest on the part of the poultry industry in the control of pullorum disease and other diseases of poultry.

Paratuberculosis (Johne's Disease) was diagnosed with increased frequency. This serious chronic disease of cattle, and occasionally sheep, will probably require intensive control measures to prevent general dissemination and heavy losses.

The Bureau of Meat Inspection cooperated with research veterinarians of the University of California, Davis, by submitting, for study, specimens of tissues from animals condemned for malignant lymphoma (leukemia or lymphosarcoma). Requests for additional services in connection with this disease are expected.

An outstanding accomplishment of the Bureau of Livestock Disease Control was the rapid progress made in the Federal-State cooperative brucellosis eradication program. This program was extended to include all counties in the State. Thirteen additional counties were declared modified certified brucellosis areas, making all but 15 of the State's 58 counties such areas since the program started in April, 1957.

The bureau also piloted and inaugurated a market cattle testing program for the recertification of beef cattle counties by testing blood samples of cull cattle at slaughterhouses to be tested for brucellosis.

New trends in the development of foods, such as nonfat diet milk, presented a labeling problem to the Bureau of Dairy Service.

Inability to recruit and retain veterinarians continued to be a problem and seriously handicapped activities of the bureaus.

Bureau of Dairy Service

A. GHIGGOILE, Chief

E. REYNOLDS, Assistant Chief

MARKET MILK PROGRAM

The Bureau of Dairy Service supervises the activities of approved milk inspection services through a system of surveys and inspections of dairies, milk plants, and laboratories, as well as the collection of samples for analysis. These factors are used as a basis to determine the efficiency and the degree of enforcement of laws and regulations by approved milk inspection services. During the year, 761 surveys and investigations on approved milk inspections were made.

Changes in Inspection Jurisdictions

During the year the City of Bellflower entered into a contract with the County of Los Angeles for the county to perform dairy and milk inspection work within the city limits of Bellflower. Under a 1959 amendment to the Agricultural Code, hearings were conducted by the Director of Agriculture involving dairy farm inspection areas in the counties of Fresno, Marin, Merced, Monterey, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Sutter, Ventura and Yolo. In all but Santa Clara and Merced Counties the entire area has been designated to one inspection area within each county, thereby eliminating outside agencies.

Established Areas

In areas where local milk inspection services are not maintained, the Director, when requested by a majority of producers and contributors of market milk in the area, may establish and conduct a milk inspection service. This service is being conducted in 24 counties.

Bureau of Dairy Service representatives made tests in the field to check upon the quality of market milk and cream. These tests included 711 lactometer readings, 7,626 flavor and odor tests, 5,257 sediment tests and 4,996 temperature tests, all made in the course of 5,874 inspections and visits to market milk dairies.

Contract Laboratories

The Bureau, because of lack of sufficient personnel and equipment at the Sacramento Laboratory, contracted with three commercial and three public health laboratories to conduct analyses on samples of market milk obtained in established inspection areas. During the year these laboratories conducted 18,685 bacteriological and chemical determinations on 6,927 samples of milk and cream. In addition, 12,575 samples were collected and forwarded to the laboratory at Sacramento for analysis, and 20,402 labels for market milk were examined for accuracy.

Laboratory Analyses

When bacteria counts are involved in the purchase and sale of milk, analyses must be made by persons licensed and supervised by the Bureau. They must hold a valid technician's license. During the year 40 investigations were made on the accuracy of such licensees. There were 111 licensed technicians at the close of the year.

Laboratories maintained in connection with approved milk inspection services must employ qualified personnel to do the bacteriological and chemical analyses on milk and cream. If successful in their tests, they receive a certificate of proficiency in market milk analysis. Twenty-six such certificates were issued in 1960. Examinations or checks totaling 89 were made on holders of such certificates, and 5,869 investigations were made on laboratory equipment.

RECEIVING POINT INSPECTION

The direct microscopic count procedure and tests for sediment, modified volumetric acidity and flavor and odor are used to determine the quality of milk and cream received at milk products plants for manufacturing purposes.

The combined odor-bacteria technique developed by experts in the bureau, for identifying milk of poor quality, is being

continued because of its simplicity, rapidity and accuracy.

During the year, 1,035,214 lots of milk and cream were examined for quality by 33,594 microscopic examinations, 449,178 temperature tests, 561,980 flavor and odor tests, 581,036 sediment tests and 63 acidity tests.

Five thousand six hundred seventeen lactometer readings were also made for the purpose of detecting milk adulterated by the addition of water.

The inspection of dairy farms producing manufacturing milk, and the making of quality determinations at the receiving platform, are voluntary programs financed through trust agreements between the processors and the Department. Sixteen dairy inspectors are employed in this program. There were 1,649 visits made to milk products plant for quality determinations on products, and 20,110 dairy farm inspections. The total amount of milk and cream actually graded amounted to more than 86,000,000 pounds, of which 12,256 lots of milk, representing 816,307 pounds, were condemned as unfit for human consumption. Also, the sale of milk and cream was suspended from 29 dairy farms until they were restored to the proper sanitary condition.

FROZEN MILK PRODUCTS PROGRAM

The frozen milk products program involved 2,556 plants manufacturing frozen milk products which includes ice cream, ice milk and sherbet. Particular attention is devoted to standards of composition and quality to ascertain that such products meet high standards of quality and the minimum food solids standard per gallon. All ingredients going into the manufacture of these products are carefully tested and analyzed to determine that the products are not detrimental to the quality of the frozen milk products into which they enter.

LEGISLATION AND REGULATIONS

In the fall of 1959 a hearing was held by the Department to consider adoption of regulations relating to the production and sale of diabetic and dietetic ice cream, and diabetic and dietetic ice milk. Following the hearing, the adopted regulations outlined the method and manner of labeling cartons intended for these products and for the control of advertising material. The standards

became effective in April, 1960. Under the statutes, a special license is required for the manufacture of these products and during 1960, 35 firms were licensed.

Inspection and Analysis

All plants manufacturing frozen milk products are inspected at irregular, frequent intervals, and samples of the products are collected at point of manufacture, distribution and retail. The total number of samples collected for analysis was 10,306, and 11,582 lots of the product were examined for quality. During the year, check weights were made on 3,544 units of ice cream and ice milk to determine if the products contained the required amount of food solids. Review of advertising and labeling materials dealing with these products required 18,741 investigations.

BUTTER CONTROL PROGRAM

Laboratory results and quality determinations are the main points involved in the butter control program. Butter grades applied to the product at the consumer's level make it necessary for sampling to be conducted at retail establishments. During the year, 6,361 samples of butter were scored and examined for quality, and 308 samples forwarded to the Bureau laboratory for chemical analysis. Six hundred twenty-seven lots of butter were investigated for correctness of weight, and 9,495 butter brands and labels were examined. All persons or firms cutting and wrapping or distributing butter received from out-of-state in packaged form must maintain licensed butter graders. During the year, 65 butter graders were licensed. There were 363 investigations or examinations made on the accuracy of their work. Failure to meet quality determinations resulted in the impounding of 7,039 pounds of butter, compared to 36,006 pounds impounded in 1959.

CHEESE CONTROL PROGRAM

During the year, 594 samples of cheese and cheese products were collected for laboratory analysis, and 12,613 labels and brands were examined for accuracy. As the result of quality determinations on 1,409 lots of cheese, 31,724 pounds were impounded for failure to meet required standards, compared to 3,275 pounds impounded in 1959.

Quality Standards

As the result of legislation adopted in 1959, quality standards were adopted by regulation for various varieties of cheese sold in California. These regulations provide that cheese sold in California, beginning September 9, 1960, must be of grades equivalent to U. S. Grade A and U. S. Grade B. In addition, nonfat dry milk used in the manufacture of cottage cheese must be of extra grade spray process.

MISCELLANEOUS PRODUCTS INSPECTION

Products in this classification include whole milk powder, nonfat dry milk, condensed milk, both whole and skim, evaporated milk, concentrated milk, acidophilus milk, cream dressing, cultured buttermilk, buttermilk, eggnog, whip cream topping, flavored milk drinks, modified milk and sterilized milk and cream.

Modified milk is a product which has been altered in composition to conform to special nutritional requirements for which a special license is required for its manufacture.

The new diet milks fall in this classification. With the introduction of these so-called diet milks, 15 licenses for modified milk were issued in 1960.

Inspection and Analysis

Samples of all products coming within the classification of miscellaneous products, as well as ingredients used in their manufacture, are collected and forwarded to the laboratory for analysis. During the year, 3,245 samples were collected for analysis, and 163 lots of such products examined for quality and labeling. A total of 32 lots were rejected for failure to meet requirements, and 3,336 lots of various ingredients used in these products were examined for quality. The number of samples collected for analysis was 68.

Quality Standards

As the result of 1959 legislation, quality standards, having to do with bacteria, moisture, acidity, sediment, flavors and odors, were adopted effective September 9, 1960, for evaporated milk, dry whole milk, nonfat dry milk, dried milk, condensed skim milk and dried whey.

Adoption of these standards was to improve and increase the quality of dairy

products for which quality standards are not established by law. Enforcement of these standards enables consumers to receive high quality products and prevents the sale of inferior products which do not meet the quality standards established for them.

LICENSING OF IMITATION PRODUCTS

Any product which contains oils or fats, other than milk fat, and intended to be used as or for milk products fall within this group. During the year, 1,448 investigations were made relating to advertising, labeling and use of such products.

During the fiscal year ending June 30, 1960, licenses were issued as follows: 12 to manufacturers of oleomargine, 214 to wholesale dealers, 1,378 to bakers and restaurants; 5 to manufacturers of imitation milk, 19 to wholesale dealers, 171 to retailers, 7 to bakers and restaurants; 2 to manufacturers of imitation cream, 11 to retailers, 50 to bakers and restaurants; 28 to manufacturers of imitation ice cream and imitation ice milk, 149 to wholesale dealers, 4,365 to retailers, and 3 to bakers and restaurants.

COMMERCIAL TESTING PROGRAM

The work of licensed milk and cream testers, samplers and weighers is required to be checked at irregular, frequent intervals because of the importance of the accuracy of this work, both to the producers and processors of milk products. There were 326 checks and examinations conducted on milk and cream testers, and 1,396 on samplers and weighers. A total of 3,683 samples of milk and cream were collected for testing, and 27,521 pieces of testing apparatus examined during the course of checking these licenses. Two hundred twenty-nine pieces of inaccurate testing apparatus were condemned.

There were 784 licensed milk and cream testers and 2,141 licensed samplers and weighers at the close of 1960. A large part of the time of the employees assigned to the fluid milk and cream testing program is devoted to checking of the accuracy of agitation of the milk in bulk farm tanks. During 1960, 306 farm tanks were installed on dairy farms, making a total of 4,571 at the end of the year, compared to 4,265 at the close of 1959. Six hundred thirty farm tanks were checked and tested during the year.

During the year, 440 visits were made to milk products plants to check upon the accuracy and correctness of tests and weights

on milk received from producers. In addition, 226 investigations were made on sampling of milk and cream.

DAIRY CONTAINER SERVICE

There were 56 dairy container brands registered in 1960, bringing the total of active certificates at the end of the year to 884. Much of the enforcement of the Agricultural Code relating to the use and handling of registered dairy containers is on a self-financing basis and supported by trust fund agreements between various operators and the Department. The four agreements in effect cover the Southern California area, the San Francisco Bay area, and the Sacramento and San Joaquin Valleys. The three investigators employed on this program made 14,103 visits to various establishments to check on containers and were instrumental in returning 65,535 containers to their legal owners. They also checked the brands and conditions of 1,394,548 containers and condemned 612 of them.

Bottle Exchanges

The operation of bottle exchanges organized and established throughout the state, and which are under the supervision of the Department, has aided materially in returning dairy containers to proper owners. During the year, 86 investigations were made on the operations of these exchanges. The activities of members of the staff connected with manufacturing milk and cream control program resulted in the return of 12,629 milk cans to their legal owners. These inspectors also examined 201,958 milk cans for defects, such as open seams and rust spots, and found 4,355 cans to be defective. These were condemned until restored to a satisfactory condition.

A total of 2,614 inspections were made to check upon the effectiveness and efficiency of mechanical devices used for the washing, sterilizing and drying of dairy containers. Dairy containers must be protected against contamination during transit, accounting for 16,314 inspectors of transportation facilities.

DAIRY SERVICE LABORATORY

The primary function of the Dairy Laboratory is to conduct chemical and bacteriological and other examinations on milk and milk products to determine conformity with legal standards, and to develop ways to

detect adulterated or unwholesome milk products. During the year, 19,911 samples of milk and milk products were examined upon which 28,894 bacteriological and chemical determinations were made. Glassware used for various methods of testing milk and cream must be examined in the Bureau Laboratory and certified as being correct before being used. During the year, 19,306 pieces were examined of which 17,993 were approved. In addition to the examination of official samples, several hundred samples of milk and milk products were checked for flavor, odor, texture, color and quality.

ANTIBIOTICS AND PESTICIDES

The increased attention focused on milk products which may have been contaminated by antibiotics and pesticide residues increased the number of samples being collected for laboratory examination, and resulted in a greater emphasis being placed on the handling and use of such products.

This was accomplished by making more frequent examinations to assure consumers of a constant supply of wholesome milk and milk products, and to prevent possible contamination of such products by misuse of antibiotics and pesticides.

Several hundred samples of milk were analyzed for the presence of antibiotics, and a program was inaugurated whereby milk would also be analyzed for such antibiotics by laboratories maintained in connection with approved milk inspection services. Many employees of these laboratories, as well as employees of private laboratories were trained by the Bureau in methods for determining the presence of antibiotics in milk with specific reference to penicillin which appeared to be found more frequently than other materials.

The concentrated and combined program of all concerned was so successful that within two or three months after the program was inaugurated the finding of sample of milk containing antibiotics was a rarity.

With specific reference to pesticides, the Bureau's laboratory techniques and procedures were changed to encompass both the Schechter and Mills procedures. The paper chromatography analysis by the Mills procedure is being used as a screening test for determining the presence of DDT and similar pesticides in dairy products. This test is illustrated in Photograph 1.



Michael Monier, Junior Chemist, Bureau of Dairy Service, performs a partition separation for the chromatographic analysis of milk for the presence of pesticides.

A special program was developed which proved to be very effective in overcoming the pesticide residue problem. This program was accelerated through augmentation of the department's budget which made it possible for the Bureau of Dairy Service to employ an additional Agricultural Chemist and to assign four additional men to field activities. Duties assigned to these four men includes assisting producers and distributors of milk in tracing possible sources of contamination of pesticide residues. Particular attention was given to feed used for dairy animals to ascertain that such feed was free from pesticide residues which might be a source of contaminating the milk supply. With the cooperation of producers, processors and other interested persons, the problem of pesticide residues in our milk supply did not become a major one. The Bureau has, and always will, continue to cooperate with the dairy industry and other agencies, both public and private, to make certain that pesticides and other contaminants do not enter into California's milk supply.

During the year, 562 samples of milk products were analyzed for pesticide residues.

As indicated earlier, antibiotics were completely eliminated in a short period of time and it is gratifying to know that, with the splendid cooperation received from the dairy industry and other agencies, the number of samples of milk products found to contain traceable and reportable amounts of pesticides is very small. Bureau officials believe that the battle against pesticides and antibiotics in milk has been won, that con-

sumers are assured a wholesome supply of milk and milk products. The Bureau takes pride in this excellent accomplishment.

SPLIT MILK SAMPLES

The Bureau is cooperating with other State agencies and with the U.S. Public Health Service in the split milk sampling program for the purpose of standardizing techniques throughout the many laboratories in California engaged in milk analysis. The term "split milk sampling" is used because samples of milk are prepared in the Dairy Laboratory by taking a large sample and splitting it into smaller samples which are forwarded to the various laboratories for analysis for the purpose of standardizing technical procedures in milk analysis and to enable laboratories to check one with the other.

GENERAL

Checking the labeling and quality of products required 4,515 visits to retail establishments and 19,202 inspections and visits to milk products plants. At these plants 2,732 temperature recording devices were checked for accuracy and 22,660 temperature control charts examined to ascertain that the products were properly pasteurized. During the year, 2,026 pasteurizer operators were checked for the accuracy of their work and at the end of the year there were 2,702 licensed operators of pasteurizing equipment. The number of high temperature short time pasteurizing units checked was 288.

New Constructions

There were 478 new milk products plants and dairy farm buildings constructed and 1,277 buildings improved. Improvements on equipment amounted to 6,121, and on methods 8,777. Three hundred twenty-five tests were made on washing and sterilizing solutions, and 41 sterility tests were made on equipment. Investigations made on water supplies totalled 2,194, with 77 samples submitted to the laboratory to check upon the safety of the water.

Collaborating Activities

Bureau members continued to assist the Dairy Industry Division and the School of Veterinary Medicine, University of California, Davis, with instructions dealing with dairy science. Staff members also assisted

with the judging of milk and milk products entries at the State Fair and at various district and county fairs. As customary, the Bureau again took over operation of the model dairy barn at the State Fair Grounds. Training courses were held in various sections of the state for state, county and city milk inspectors and sanitarians.

The Bureau continues assisting and co-operating with the U.S. Public Health Service in the collection of milk samples and

forwarding them to the laboratories in Cincinnati, Ohio, and Las Vegas, Nevada, where tests are made for the presence of radioactivity in milk. In addition, samples are collected at eight sampling stations in California for the California State Department of Health for radiological surveillance. Prior to 1960, only one station in California was sampled for the U.S. Public Health Service, but this has now been extended to three sampling stations.

Bureau of Livestock Disease Control

H. G. WIXOM, D.V.M., *Chief*

E. F. CHASTAIN, D.V.M., *Assistant Chief*

The Bureau of Livestock Disease Control enforces those statutes enacted to protect the livestock and poultry industries of California from losses due to transmissible diseases.

It also develops and enforces those rules and regulations designed to implement the laws. The Bureau cooperates closely with the livestock sanitary officials of the United States Department of Agriculture, county livestock departments, and public health officials.

The Bureau appreciates very much the high degree of cooperation and interest in its work displayed continually by veterinary practitioners and others engaged professionally in the practice of veterinary medicine.

Anthrax

Ten outbreaks reported from seven counties were confirmed by laboratory diagnosis. All but one outbreak were in long established areas. One outbreak occurred in the feed lot of a meat company in Santa Clara County, resulting in two deaths in 1,200 head. As an additional aid, a map of California was prepared showing endemic anthrax areas in which outbreaks have occurred through the years.

Anthrax was reported in 10 herds: three in San Luis Obispo and one herd each in the counties of Amador, Fresno, Merced, Sacramento, San Joaquin, Santa Clara and Yolo. These cases were laboratory-confirmed.

The number of animals in the herds affected were: Amador, 248; Fresno, 8,700; Merced, 120; Sacramento, 56; San Joaquin, 300; San Luis Obispo, 1,115; Santa Clara, 1,200; Yolo, 200; Total, 12,939.

The County in which the disease was reported, the month in which it was reported and the number of animal deaths attributed to anthrax follows: Amador, January, 2; Fresno, October, 6; Merced, October, 5; Sacramento, January, 1; San Joaquin, January, 2; San Luis Obispo, September, 7; Santa Clara, March, 2; Yolo, November, 3.

Aujesky's Disease

In August of 1960, Aujesky's disease, also known as pseudorabies because of its similarity to rabies, appeared among sheep on a ranch near Turlock. This is the first case reported in California in several years. Sixteen recently purchased sheep developed symptoms of the disease and died within five to six hours. None of these animals were observed by a veterinarian. A week later a calf on the premises developed typical symptoms and died four hours later. The calf's brain was submitted to the Viral and Rickettsial Laboratory, State Department of Public Health, Berkeley, where the diagnosis was confirmed by virus isolation. Two cows, one sheep and 250 hogs remain on the ranch and have not shown symptoms.

Aujesky's disease, is an acute infectious disease of most domestic animal species and rats. The disease is characterized by intense itching of the skin of the hind parts of an animal and by fatal termination.

Bluetongue

Nine outbreaks were reported totaling some 5,360 sheep. Of 446 head affected, 49 died. All of the cases were confined to five counties: Calaveras, Colusa, Kings, Stanislaus and Sutter. The first case of the year was

ported in August and the last in November. Morbidity and mortality rates were slightly higher than in 1959. The disease can be prevented by annual vaccination.

Equine Encephalomyelitis

Equine encephalomyelitis (sleeping sickness of horses) struck five times during the year, twice in Merced County and once in San Joaquin, San Bernardino and Amador counties. Two horses died from the annually recurring disease and one was destroyed for humane reasons. All cases occurred between July and the end of the year.

Infectious Bovine Rhinotracheitis (IBR)

During the year, 21 outbreaks were reported from eight counties. The most severe losses occurred in the San Joaquin and Sacramento Valleys in the summer months. A few isolated outbreaks were reported from Sonoma, Modoc, Ventura and Los Angeles counties. Losses consisted mostly of diminished weight gains. Only 24 animals succumbed—a tribute to the IBR vaccine's effectiveness. Outbreaks occurred mainly in feedlot cattle.

Johne's Disease (Paratuberculosis)

On occasion, cattle infected with Johne's disease may react to the standard tuberculin test. This reaction is due to the very close relationship of the Johne's disease bacillus and the tuberculosis organism. Although laboratory work on many no-visible-lesion tuberculosis reactors has shown that paratuberculosis is not a major interfering factor, the importance of this disease cannot be ignored. An accurate picture of the incidence and distribution of Johne's disease in California is not known. It is insidious, often remaining undiagnosed on a ranch for extended periods.

During 1960, this disease was diagnosed on 14 California premises. Laboratory confirmation was obtained on 20 head. Eight cattle were reported to have died from Johne's infection. In addition, Johne's disease was discovered in two herds of exhibition reindeer, one in San Bernardino County and one in Santa Cruz County.

The intermittent chronic diarrhea characteristic of this disease results in decreased milk production and loss of weight. The afflicted animal often succumbs from other terminal conditions. In an infected herd, annual losses can reach 15% of all adult cattle. Control of Johne's disease is very difficult.

Young calves are extremely susceptible although they do not usually show symptoms until they reach maturity. Segregation of calves at birth may permit the infection to die out after a few years. The only other alternative appears to be elimination of the herd.

Leptospirosis

Leptospirosis is an infectious disease caused by a bacteria and is of major concern of cattlemen. The disease occurs in various manifestations in cattle, swine, horses and dogs, and is transmissible to man. The bacteria is harbored in the kidneys and transmitted through the urine. *Leptospira pomona* is the most common leptospiral infection of livestock in California. Vaccination to control the disease is quite successful but immunity is generally only effective for one year.

This past year outbreaks were reported from every segment of the state. A slight reduction in 1960 under the number reported in 1959 can be partly attributed to the increased practice of vaccinating on ranches where infection has once occurred.

Outbreaks of Leptospirosis Reported in 1960

Species	North	Central	South	Totals
Cattle	82	122	8	212
Horses	2	9	4	15
Sheep	—	—	—	—
Swine	5	16	—	21
1960 Total	89	147	12	248
1959 Total	70	182	39	291

Chorioptic Scabies (Mange)

On September 9, 1960, chorioptic scabies was found near Bakersfield in seven bulls remaining from a Hereford beef herd dispersed just a year before the disease was found. Eighty-three herds were exposed throughout the state, requiring location and inspection.

Inspections were conducted on all of these herds. No new laboratory positive cases were found but a few animals with slightly suspicious skin irritations were treated as a precautionary measure.

Chorioptic scabies was diagnosed and treated on three other occasions during the year. All cases involved small lots of beef animals. All exposed cattle to these outbreaks were inspected with negative finding.

Scabies

There were no cases of psoroptic or sarcoptic scabies reported in cattle or sheep in the state during 1960.

As the year 1960 began, restrictions on cattle importation applied to Alabama, Colorado, Illinois, Kansas, Nebraska, Texas and Wyoming. In February, Alabama was deleted from the list. By the end of the year it was also necessary to impose restrictions against Idaho, Oregon and Utah. The action was taken because of new outbreaks in those states.

The Department's sheep scabies Regulation 760 was amended on April 21, adding New Mexico to the list. New Mexico had been previously deleted on February 19, with Georgia, Louisiana and Mississippi.

6,000 Permits Issued

In the course of the year approximately 6,000 scabies permits were issued for the importation of 786,444 head of cattle, and 672 permits were issued on 509,606 head of sheep. These permits included importation requirements.

Permits were closely correlated with health certificates issued in the state of origin, and with border station inspection reports, a process that has resulted in finding several cases of noncompliance. In such shipments the cattle were quarantined at destination, violation notices issued, and the animals treated as a precautionary measure against scabies.

Scrapie

Scrapie did not appear in California sheep during this past year.

As the year ended, 234 flocks and 179,551 sheep remained under surveillance because of contact with scrapie-exposed sheep. Slaughter of all progeny of exposed sheep from earlier outbreaks was completed, 211 sheep being destroyed and the state's share of the federal-state indemnity paid to owners was \$3,441.25.

Late in the year it was learned that the owner of an infected flock in Illinois had sold a ram to a California sheepman. As a result of this discovery, two small flocks involving 14 sheep were destroyed requiring the state to pay \$382.05 in indemnity.

Canada Restriction Removed

On January 8, the restriction prohibiting importation of Canadian sheep was removed after assurance was received from Dominion Livestock Officials that Canada had adopted a scrapie eradication program equivalent to that of California.

Diseases of Poultry

The Bureau of Livestock Disease Control has the responsibility for supervising the disease phases of the Marketing Agreement for Poultry Improvement. This official program, designed to control pullorum disease and fowl typhoid, is administered by the Poultry Improvement Advisory Board. It is a voluntary program recognized as being equivalent to the National Poultry and Turkey Improvement Plans.

Close liaison is maintained by the Bureau with all segments of the poultry industry, including breeders, hatcherymen and growers, with respect to the control of pullorum disease, fowl typhoid, and certain other egg-transmitted diseases, including paratyphoid and paracolon infections. California has made outstanding progress in the control of these diseases, thereby effecting very large savings in the state's multi-million dollar poultry business.

Health inspections of poultry flocks are made frequently by the Bureau to permit participants in the National Poultry and Turkey Improvement Plans to ship poultry or hatching eggs to Canada in compliance with Canadian import regulations.

Bureau as Consultant

The Bureau also functions as a technical consultant to the Poultry Improvement Commission which operates official poultry egg and meat production tests at Modesto and Keyes.

In March, 1960, a feed company reported that at least three commercial chicken flocks had experienced a sudden decrease in the size of eggs produced by their flocks. Feed samples submitted by one of our regulatory veterinarians to the Bureau of Field Crops laboratory for examination were found to contain 7 to 8 parts per million of bromide, which in this amount could be a residue product of a grain fumigation process. Georgia workers have reported that 5 to 6.5 parts per million of bromide in the feed is sufficient to produce small eggs.

Early in June, 1960, the central coast region experienced a severe heat wave that killed nearly one quarter million chickens. Heaviest mortality occurred in Sonoma County where approximately 6% of the laying hens expired. One poultry ranch near Sebastopol lost about 25,000 layers. The Bureau investigates situations such as these, where many poultry flocks are affected by an unusual condition.

ARTIFICIAL INSEMINATION

Tailed Report Made

A detailed report is prepared biennially by the Governor and the Legislature on artificial insemination practices. This report is available at the Department's headquarters.

Seven organized artificial breeding associations accounted for 96% of dairy cow inseminations.

About 350,000, approximately 37% of the dairy cows in California are now being bred artificially. An average of 50 practicing veterinarians and 250 lay technicians are engaged in conducting the field services.

The use of frozen semen is steadily increasing. In concentrated dairy areas conception rates continue to improve, and organized association records show that cows bred between 30 and 60 days after mating are attaining conception rates of 75% on first services. Cows bred at 60 to 90 day periods showed a 72% rate.

Artificial insemination was used extensively in turkey breeding flocks. Reports received indicate that about 1,200 purebred beef cows per year are now being bred artificially. No reports on other animals are received.

Tuberculosis Program

The Bureau, in cooperation with the Animal Disease Eradication Division of the United States Department of Agriculture, continued the statewide tuberculosis program.

Eighteen counties were redeclared modified accredited areas. Thirteen counties, Butte, Kern, Los Angeles, Madera, Marin, San Benito, San Francisco, San Luis Obispo, Santa Clara, Solano, Sonoma, Sutter and Yolo were reaccredited for three years. Five counties, Alpine, Mariposa, Modoc, Plumas and Sierra were reaccredited for six years.

Regulatory veterinarians tested 440 goats, 24 herds and private veterinarians tested 10 goats, one reacting.

The status of infected herds is the best in the history of the eradication effort in California. Special attention has been given to the known infected herds in the state by conducting frequent cervical tests and by making epidemiological studies in the herds. A change in the Uniform Methods and Rules of the United States Department of Agriculture effective April 1, 1960, required that all tuberculin reactors be considered in-

TABLE 1
Cattle Tuberculin Tested in 1960

Group	Lots	Total Cattle Tested	Reactors	Reactor Rate (%)
State-federal regulatory veterinarians	10,998	658,222	2,139	0.32
Los Angeles County regulatory veterinarians	2,349 *	44,319	93	0.21
Private veterinarians	—	8,045	2	0.024
Total	13,203	710,586	2,234	0.314

* Principally imported cattle tested on arrival.

fectured irrespective of herd history and post mortem or laboratory findings when calculating rate of infection. Under this new criterion, some counties showed a statistical increase in percentage of total "infection".

BRUCELLOSIS

Calfhood Vaccination

Another record was set with a new high total of 428,390 calves being vaccinated on 29,665 premises. Vaccinations are performed by practicing veterinarians under contract with the State and Federal governments. The work is supervised by the Bureau of Livestock Disease Control. Included were 161,436 calves of the beef breeds and 266,954 dairy calves, for a grand total of 4,418,586 calves vaccinated for brucellosis in California since the program began on January 2, 1948.

A new type of ear tag, orange in color and plastic coated, was introduced on July 1, to facilitate identification of vaccinated cattle. Numbered in accordance with the national cattle ear tagging system and bearing the legend "CALIF. VACC", these tags are placed in the right ear at the time of vaccination. They supplement the left ear tattoo mark. Effective the same date, payment to contract veterinarians was increased to 90 cents per head for vaccination of six or more calves. It was formerly 75 cents.

Area Certification

With the re-allocation of \$50,000 in federal funds on January 15, testing was resumed in the counties of Fresno, Kings, Tulare, Kern, Santa Barbara, and Ventura.

By mid-summer the program proceeded well throughout the intensified dairying area of the San Joaquin Valley, reducing the

number of untested herds at a rate unprecedented in the three year history of the program.

Testing started in Los Angeles, Orange, San Bernardino and Riverside counties shortly after July 1, extending the program to all counties. At the close of the year only 15 counties remained to be certified. Good progress was reported in all of the 15 counties. The year 1960 will undoubtedly prove to be the peak year of California's brucellosis eradication effort.

In a few selected areas of the state, field trials were conducted on a herd segmentation procedure whereby ring tests were applied to segments of a herd following which only suspected strings and dry cows are blood tested. Best results were obtained in the Modesto area in a few herds that had been nearly cleaned up on previous blood tests. The procedure, which requires close supervision in herds in which there is a continual change in animals between milking strings, has been found to be impractical in areas being tested for the first time.

Throughout the year 13 counties attained the status of modified certified brucellosis area. Certification is granted counties when the incidence of infection is reduced to less than 1% of the cattle and to less than 5% of the herds.

The counties of Del Norte and Mono became the first California counties to gain the distinction of recertification. Mono County was recertified on November 4, and Del Norte County on November 12.

Market Cattle Testing Program

Formerly known as the Cull and Dry Cow Testing Program, this simplified method of recertifying range cattle herds was adopted in the spring of 1960. The new technique, developed by the United States Department of Agriculture and various states, based on collecting blood samples from cows at slaughter rather than at the ranch, was extended by year's end to 18 counties after having met with full approval of Northern California cattlemen.

Market cows over three years of age are identified with durable tags before slaughter. Blood samples accompanied with tags are submitted to laboratories for testing. A county may be recertified under the program when at least 5% of the breeding cows in the area are tested each year, or 15% are tested over a three year period and the infection rate does not exceed 1% of

TABLE 2

Official Brucellosis Tests Conducted in 1960 Federal-State Cooperative Program

Brucella Milk Ring Tests (BRT) _____	18,067
Brucella Milk Ring Tests (BRT), Negative _____	15,558
Brucella Milk Ring Tests (BRT), Suspicious _____	2,509
Percent Milk Ring Tests, Negative _____	86.0%
Percent Milk Ring Tests, Suspicious _____	14.0%
Number Cattle in Ring Negative _____	
Herds _____	1,273,806
Number Cattle in Ring Suspicious _____	
Herds _____	306,714
Herds Blood Tested (Dairy and Beef) _____	12,692
Cattle Blood Tested (Dairy and Beef) _____	476,906
Cattle Reacting to Blood Test _____	5,870
Percent Infection in Cattle Blood Tested _____	1.0%
<i>Private Brucellosis Tests Conducted in 1960</i>	
Lots Blood Tested _____	3,326
Cattle Blood Tested _____	31,346
Cattle Reacting to Blood Test _____	111
Percent Infection in Cattle Blood Tested _____	0.3%
<i>Goats Tested for Brucellosis in 1960</i>	
Number of Lots Tested _____	194
Number of Goats Tested _____	1,775
Number of Goats Reacting Positively _____	None

the cattle and 5% of the herds and at least 80% of the heifer calves retained in the area each year are officially vaccinated against brucellosis.

Whey Testing Pilot Program Completed

By May an abundance of data had been accumulated on the use of the whey test in dairy cattle.

Inasmuch as this testing method costs an estimated 20-30% more than straight blood tests and does not noticeably reduce the necessary amount of handling of cows, it now appears to the Bureau that the whey testing will not be an acceptable field procedure. However, the test is valuable in handling persistently infected herds.

In Sonoma County, where the pilot program has been in operation since 1958, a gradual change-over to the standard BRT and blood testing procedures was made in the latter half of 1960. The program has been conducted in cooperation with the University of California and the United States Department of Agriculture since 1957.

Swine Brucellosis Testing

Limited blood testing of swine was confined to isolated tests of animals for sales or fairs or for herd certification purposes. Ten herds, representing 254 head, were recertified as brucellosis free under the voluntary brucellosis eradication program. About 10 other herds of record could be qualified



market cattle back tags (inset) placed on shoulders by owners identify cows at time of slaughter. Blood samples are collected for brucellosis tests eliminating the necessity of testing on ranches. Sale yard tags are shown on hips.

provided required herd tests were completed but for economic or other reasons the owners did not test.

Samples which were blood tested came from 27 counties. Twenty-six lots revealed factors originating in nine counties. A total of 228 lots were tested, representing 418 samples of which 1,392 were negative, 18% positive, indicating an infection rate of 18%. Approximately 50,000 breeding sows were born during 1960 in California, producing a half million pigs.

A revised voluntary certification program for herds of swine became effective on April 1, 1960. Under the new program, a herd may be certified brucellosis free when all breeding sows over six months of age pass two successive tests 90 days apart. Annual recertification is made when there is a negative test in the entire herd. Replacements from sources other than certified brucellosis free herds may not be added until two negative tests are completed not less than 30 days apart. Blood samples are taken by an accredited veterinarian selected and paid by the owner.

Vesicular Exanthema—Garbage Cooking

A continued decline in the total of garbage feeding operations in California was recorded in 1960. As of December, there

were 235 garbage feeders owning about 160,000 garbage fed hogs, compared to 264 licensed operators feeding 176,000 hogs a year earlier. In the course of the year 291 licenses to feed cooked garbage were issued.

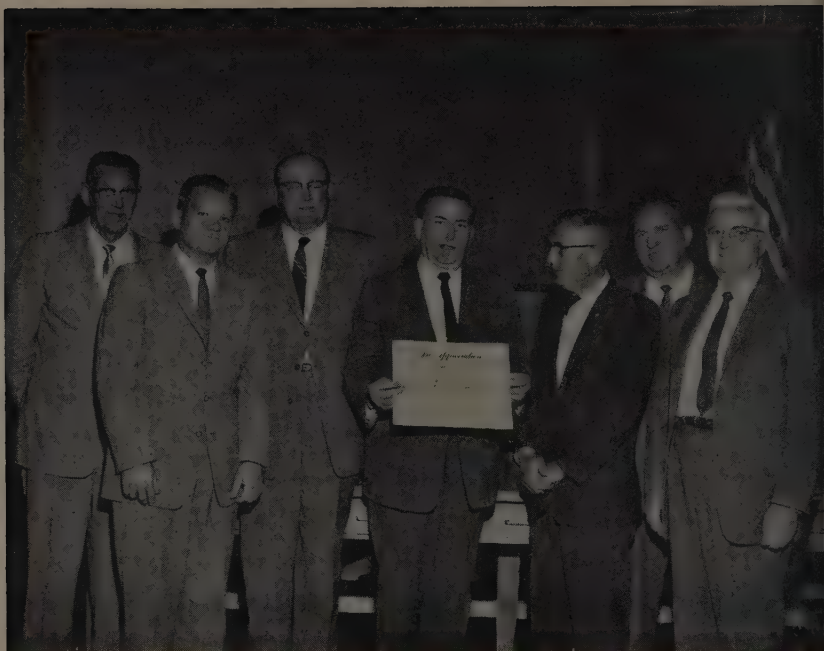
Foot lesions suggestive of "VE" were reported on two ranches. Blood samples proved negative for the disease.

Seasonal and marginal garbage feeders, making up about 50% of the current feeders, presented the main enforcement problems. Indeed, the larger operators have become the law's staunchest supporters. These people have seen the disease and felt its expensive impact.

On May 9, officials of the Agricultural Research Service, United States Department of Agriculture, presented the Department a certificate of appreciation of California's contribution to the eradication program.

TABLE 3
Enforcement Procedures—1960, Bureau of
Livestock Disease Control

Vesicular Exanthema—Garbage Cooking	
Ranch Inspections Reported	8,197
Hold Orders with Violation Notices Issued	55
Violation Notices Only Issued	27
Citations Issued	5
Court Trials	9
(Four trials were pending from 1959)	
Defendants found guilty as charged	8
Defendants found not guilty	1



A United States Department of Agriculture "Certificate of Appreciation" was presented to officials of the California Department of Agriculture at the departmental staff meeting held May 9, 1960, in Sacramento. The certificate was in recognition of California's contribution to the national vesicular exanthema eradication program. The date of eradication was shown as October 22, 1959. Left to right, Dr. L. D. Meyers, field supervisor of the "VE" Eradication Program, Bureau of Livestock Disease Control, California Department of Agriculture; Dr. H. G. Wixom, Chief of the Bureau of Livestock Disease Control, California Department of Agriculture; Dr. J. E. Stuart, Chief of the Division of Animal Industry, California Department of Agriculture; State Director of Agriculture William E. Warne, California Department of Agriculture; Dr. C. L. Gooding, Veterinarian in Charge of the California Office of the Animal Disease Eradication Division, ARS, U.S.D.A., who presented the certificate to Director Warne; Dr. John DeMattei, District Veterinarian, San Francisco, Bureau of Livestock Disease Control, California Department of Agriculture; Dr. A. G. Boyd, Assistant Director, California Department of Agriculture.

Importation of Australian Sheep

At the close of 1959, two shipments of 7,718 Australian sheep were under quarantine at the Port of San Diego, and 10,227 were under quarantine at a Norwalk, Los Angeles County, slaughtering establishment.

A third importation on January 16, 1960, contained 23,272 head; 1,175 sheep died en route; 682 died while under hold order at the port and 2,800 showed signs of sickness. Pneumonia, caused by crowding in the pens, and inclement weather, were recorded as the most frequent causes of the deaths.

The fourth shipment arrived on June 8 at San Francisco and was held there in quarantine pens approved by the Animal Inspection and Quarantine Division, Animal Research Service, United States Department of Agriculture; 23,890 head were unloaded, 588 died at sea. 439 sheep died after arrival.

Both shipments were held under a 30 day federal quarantine as a precautionary measure against introduction of infectious or contagious disease. Bureau veterinarians carefully inspected the sheep prior to their release from federal quarantine, and held them under surveillance until all the animals

TABLE 4

**Summary of Laboratory Accessions and Serological Tests Reported by
Bureau of Livestock Disease Control 1960**

Laboratory	Poultry accessions	Pullorum agg. tests	Typhimurium agg. tests	Animal accessions	Bruc. agg. tests	Leptospirosis agg. tests
Amamento	941	303,007	247,025	723	25,164	1,072
Ameno	2,832	498,350	391,985	1,600	144,081	2,397
Aluma	1,668	104,050	95,468	736	66,711	776
Gabriel	1,528	189,626	178,209	815	180,996	1,003
Flock (Poultry only)	5,279					
Lancaster (Poultry only)	1,160					
Totals	13,408	1,095,033	912,687	3,874	416,952	5,248

are slaughtered. On the last shipment, federal officials controlled the animals while in California until they were delivered to a slaughtering establishment.

Livestock and Poultry Pathology Laboratories

During 1960, the Bureau's four general laboratories adopted, on a routine basis, diagnostic procedures using tissue culture techniques to diagnose such diseases as infectious bovine rhinotracheitis of cattle and atetongue of sheep.

Each of the laboratories had been studying tissue culture methods, but it was not until 1960 that practical application of serum neutralization and virus isolation could be utilized routinely. Further work is being conducted in the field of avian virus diseases to ascertain if other tissue culture tests can be adopted for a practical diagnostic tool. All six of the laboratories are experiencing changes in livestock and poultry populations for their areas, as well as ownership and management factors in herds and flocks, which in turn change the laboratory diagnostic procedures as will be noted in this report.

The number of specimens per case and the total case volume reached the highest point in the records of the Turlock Laboratory and the Lancaster Laboratory. In most areas, except the central San Joaquin Valley, there has been a decrease in the volume of poultry cases submitted to Bureau laboratories. Part of this decrease is attributed to segregation and increase in the size of flocks throughout the state, and to the fact that, in some areas, large poultry organizations have employed fulltime, laboratory-trained veterinarians in an effort to concentrate disease control in their flocks.

The "table top" type of diagnosis, as was performed for so many years in the past, can no longer be rendered. The present day

larger organizations desire an accurate and proven diagnosis which requires more work by laboratory personnel. This work involves different techniques in the isolation and identification of mycotic, bacterial, viral and the ever-important group of pleuropneumonia-like organisms.

One of the biggest increases during the year in Bureau laboratory service was due to an increase in turkey breeders. Over two million pullorum and paratyphoid tests were performed by Bureau personnel during 1960, about a half million more tests than were performed in 1959.

In 1960, numerous diagnoses of pullorum disease in chickens were made. This is an unusual situation as the state is relatively free of this disease. These diagnoses of pullorum disease, almost in their entirety, were in chickens from out-of-state eggs hatched in California hatcheries. This is dangerous because of possible spread to California turkey breeders who have enjoyed a clean status for many years.

An unusual situation occurred in several turkey breeder flocks. Erysipelas broke out in hens about 72 hours after their artificial insemination. These outbreaks were somewhat "explosive" in that the mortality on some ranches exceeded 100 birds within 24 hours. Each of the flocks had a history of vaccinated toms, but the hens had not been vaccinated. Further investigation revealed that some of the toms yielded *Erysipelothrix rhusiopathiae* from the semen.

The volume of large animal cases remained about the same as previous years. The incidence of bovine abortions is still a continual problem to the producers, and the significant diagnoses in cattle were epizootic bovine abortion, leptospirosis, listeriosis, vibriosis, salmonellosis, and nonspecific bacterial agents. Our pathologists report that a routine procedure for the identification of causative agents of abortion must include

the classic bacteriology, animal inoculations, histopathology, serology, mycology, and virology as a routine in the examination of each fetus submitted.

Each of the general laboratories is making a more concentrated effort in the attempts to isolate *Mycobacterium bovis* (the bacteria causing bovine tuberculosis) from cattle found to be reactors when tested for tuberculosis under the official program. Attempts are also made to isolate any other acid-fast organism which might lead to the demonstration of a probable cause of sensitizing

cattle to tuberculin. At the end of the year, the phenomenon of cross sensitization with atypical acid fast bacteria to mammalian tuberculin in laboratory animals has not been demonstrated by Bureau workers. This is becoming a very important function of our laboratories.

In the north coastal areas, where Johne's disease appears to be endemic, 15 cases were diagnosed during the year; about the same number of cases diagnosed each year for many years.

Bureau of Livestock Identification

PAUL ROBERTSON, *Chief*

CARSON HUBBARD, *Assistant Chief*

The Bureau of Livestock Identification serves the livestock industry of California in protecting it from loss of livestock by theft or straying. The prosecution of livestock thieves and the inspection services performed are a deterrent to would-be violators of the law.

The authorization for the functions of the Bureau are derived from the California Agricultural Code, Division 3, Chapters 2-4-8. The Bureau is financially self-supporting and operates from fees paid for services rendered.

Brand Registration

The Hide and Brand Law provides for the registration of any design which is permanently impressed on the hide of cattle, horses, mules, burros and sheep to denote ownership, and all such designs must be recorded with this Bureau before use.

Brands for swine may be recorded, but it is not mandatory.

The brand recording fee is \$2 and is renewable each year at the rate of \$2.

Renewal fees may be paid in advance up to 10 years. When the renewal fee is not paid within the thirty day grace period after December 31, the brand is suspended but may be reinstated within the year by payment of a \$4 reinstatement fee.

Brands may be transferred from one owner to another by recording the transfer and paying a transfer fee of \$2.00.

During 1960 there were 2,408 new recordings, 1,019 re-instatements, 21,232 renewals, and 536 transfers.

Licenses

The Bureau licenses all persons engaged in the slaughter of cattle and horses. The license fees range from \$20 to \$100, depending upon the monthly volume of slaughter.

Persons engaging, as a business, in the sale of cattle at a public salesyard are required to procure a license and post a bond in the amount of \$1,000. The license fee is \$100.

Stockyards posted by the United States Department of Agriculture under the Packers and Stockyards Act are exempt from this license provision.

Representatives of the U. S. Department of Agriculture posted a major portion of the salesyards in the latter part of 1959 and early 1960, which action accounts for the decrease in license renewals as compared to the previous year.

Licenses Issued	1960	1959
Cattle slaughterers	260	122
Horse slaughterers	15	9
Public salesyards	9	43

Lost, Strayed or Stolen Animals

A weekly bulletin published by the Bureau contains a complete description of each animal reported missing. A copy is sent to all brand inspectors and sheriffs' offices.

Many animals stray from home pasture without the knowledge of the owner, and, therefore, are not reported missing. These animals, when located, are returned to the owner. Thus it is possible to have more animals returned than are reported missing. Also, an animal may be reported missing in one year and returned in the next year.

In 1960 the total value of animals returned to their owners was in excess of \$350,000. Animals returned to owners in 1960:

	Reported Missing	Returned	Value of Animals Returned
Cattle	1,121	2,601	\$310,845
Horses	2	87	13,980
Sheep	242	1,626	31,607
Goats	0	1	10
Swine	0	9	270

Strays

Stray animals are those found in possession of persons other than the true owner being held without his knowledge or consent.

Stray animals are seized by the department and advertised as required by law. Animals not claimed by the rightful owner within 30 days are sold at public auction. Any person, upon proper proof of ownership, may claim the proceeds of such sale within one year.

Cases opened in a prior year and the animals involved sold during 1960 account for the number sold exceeding the number seized.

Animals seized during 1960 and neither returned nor sold are carried into the following year. Unclaimed proceeds are paid to the Department of Agriculture Fund.

Strays handled in 1960:

	Seized	Sold	Returned	Value of Animals Returned
Cattle	168	113	80	\$8,285.50
Horses	26	18	8	775.00
Sheep	31	31	2	15.00
Goats	11	24	0	0
Swine	10	10	0	0

Inspection

The one activity of the Bureau requiring the greatest amount of time and involving the largest expense is inspection of animals for marks and brands.

There are two types of inspection maintained in California: point of origin and destination.

In counties or geographical areas where cattle shipments require inspection before shipment, the point of origin inspection is maintained. These areas are established when a majority of the cattle owners, present and absent, request a public hearing, request inspection prior to the movement from that area. Cattle shipped from areas other than point of origin, which are destined to slaughterhouses, salesyards, or stockyards are inspected at destination.

Regular inspection service is maintained at all cattle salesyards, posted stockyards, private dispersal sales and slaughterhouses. Tallow works and hide companies also receive inspection. Horses are inspected only at slaughterhouses prior to slaughter.

A field force consisting of 102 state civil service brand inspectors and 9 supervisors is maintained to carry out the functions of the Bureau. The physical inspection of animals and hides, constituting the major activity of this force, totaled 6,011,080 inspections in 1960.

The principal source of revenue for the operation of the Bureau is derived from brand inspection fees. The fee structure was established in 1949 to allow for the accumulation of a workable surplus of funds to insure the service against unforeseen events and fluctuation in the movement of cattle.

The number of paid inspections during the past five years have ranged from 4,393,000 to 4,906,000. If present trends should continue, the inspection service could only be continued by drawing on the surplus fund for approximately two or three years, without a change in fee structure.

Enforcement

An important function of the field staff is the investigation of cattle theft complaints and prosecution of cattle thieves. Bureau officials assist local law enforcement agencies in the collection of evidence and presentation in court cases. Convictions of violators of the Hide and Brand Law may result in one of three types of sentence or a combination of these; restitution to the victim, a jail sentence and a fine.

There were 122 warning violations issued for various infractions of the Hide and Brand Law during 1960. The following table shows the results of the Bureau's enforcement activities for the year:

Grand Theft Cases: complaints filed, 16; convictions, 20; acquittals, 1; cases pending, 0.

Sentences: state prison, 0; county jail, 2; probation granted, 16; restitution ordered, 8; fines, \$400.

Misdemeanor Cases: complaints filed, 21; convictions, 17; acquittals, 2; cases pending, 3; fines, \$1,928.

Beef Council

The Bureau serves as the collection agency for the California Beef Council, as provided by law adopted in 1957. The law provides for the collection of 10 cents per

head on all cattle inspected except hides, cattle shipped for purposes other than sale, animals less than three months of age, and animals sold for reproduction purposes.

Collections by the Bureau since the beginning of the program are as follows: 1960, \$97,312; 1959, \$127,312; and 1958, \$140,669.

Public Relations and Training Film

A motion picture "Heraldry of the Range" depicting the work of the Bureau of Livestock Identification was completed and made available for distribution in Sep-

tember. In color and with sound, the picture tells about brands, brand registration, techniques of branding and the modern cattle rustler. It shows the County Sheriff, California Highway Patrol and the Brand Inspectors working together as a team to protect the cattleman's livestock.

These films are available for showing to any interested groups. The film has been in constant demand since its release in September and showings are scheduled several months in advance.

Bureau of Meat Inspection

DR. R. W. McFARLAND, *Chief*

DR. G. W. YEAGER, *Assistant Chief*

The Bureau of Meat Inspection enforces Sections 301 to 325 of the Agricultural Code to protect the public against fraud, false labeling, unwholesome, unsound or otherwise objectionable meats and meat products.

The law provides state meat inspection exemptions for counties of less than 28,000 population, for the farmer slaughtering his own animals for his own consumption, and for specific operations in retail meat markets. Also enforced are Sections 321-325 of the Code providing for the licensing, inspection and handling of foreign cold storage meats.

Effect of 1960 Census

State meat inspection became mandatory in Sutter, Yuba, and El Dorado counties when the 1960 census listed populations of each of those counties as exceeding 28,000. Of the 58 counties in California, meat inspection is now mandatory in all but 19. Of five plants in the three previously exempt counties, one was already under inspection and the remaining four did not apply for inspection.

Scope of Service

One hundred and twenty-five state inspectors, including supervisors, carried out their duties in 364 State inspected plants. Of these plants, 35 conducted slaughtering operations solely, 16 performed both slaughtering and processing operations, while 313 were strictly meat processors.

The city of San Francisco had 50 processing establishments operating under the

supervision of the San Francisco Health Department. It is the only remaining municipal inspection service approved by the Department in accordance with the law.

The number of plants operating under exemption remained at two unchanged from the previous year.

Cost of Inspection

State Meat Inspection is supported from the general fund of the State appropriated by the Legislature. The total cost of State Meat Inspection exceeded the million dollar mark for the first time, in the 1959-1960 budget year, amounting to \$1,047,163, including \$96,125 paid in compensation for overtime and holiday work by inspectors. The cost of this overtime is reimbursed to the State by the establishments involved.

Additional Supervision in Bay Area

In March, a Supervising Meat Inspector's position was created in the San Francisco Bay Area to assist the Supervising Veterinarian in handling the increased work load in that district. The other similar position is in the Los Angeles district. This is a non-veterinary position.

Humane Slaughter

The Humane Slaughter Law became effective July 1, 1960. This law requires that State Agencies and Meat Packers, contracting with State Agencies for the sale of meat, must handle and slaughter animals by designated humane methods. Regulations designating humane methods of slaughter

re added to the Administrative Code on December 31, 1959, and regulations designating methods of identifying the animals slaughtered and handled were added on June 19, 1960.

At the end of the year, 18 State inspected slaughtering establishments were humanely slaughtering and handling animals in compliance with the Humane Slaughter Law for one or more species of animals.

The Bureau's regulations pertaining to the humane slaughter of livestock are in general conformity with those of the Meat Inspection Division of the United States Department of Agriculture.

Slaughtering

A total of 1,509,828 animals were slaughtered in State establishments in 1960, an increase over 1959 of 95,652 animals, or 7 percent. The number of cattle, horses, sheep and goats slaughtered all registered an increase, while the number of swine slaughtered decreased under 1959.

Processing

State inspected meat plants produced 10,450,064 pounds of meat food products, an increase of 10,719,363 pounds, or 4 percent over 1959. More meat food products were processed this year than in any other period in the forty-three years of State meat inspection. Approved municipal inspected plants produced 25,892,535 pounds of meat food products, an increase of 3,535,737 pounds, or 16 percent over last year.

Labels

During the year, 3,789 labels and label sketches were reviewed and acted upon. Of this number, 119 were disapproved because they did not comply with labeling requirements. Hundreds of labels, not included in these figures, were returned without action for varied appropriate reasons. Many label

sketches were tentatively approved with the understanding that certain required corrections would be made when the label was printed in final form.

The cost of printing a single label frequently amounts to several thousands of dollars. To avoid costly mistakes, establishments may submit sketches of proposed labels to the Sacramento office for tentative approval prior to printing. Great care must be exercised in correcting and approving such labels.

Meat Inspection Laboratory

During 1960, the meat inspection laboratory in Sacramento examined 3,342 samples of various products and materials for adulterations, contamination, preservatives, artificial coloring, pesticide residues, net weights, and excessive amounts of added water or fillers to sausage and other meat products.

This total reflects an increase of 671 samples, or 25 percent over 1959. It is estimated that over 20,000 separate analyses were performed on the samples submitted. This year set an all-time record in the total of meat laboratory samples analyzed. The continuing increase in the chemical laboratory control is necessary to keep abreast with the increasing amount of meat food products produced in State establishments.

Pathology Laboratory

Meat Inspection personnel were assisted in biological laboratory control on over 500 water, histological, pathological and parasitological samples and specimens by the Livestock and Poultry Pathology Laboratories of the Bureau of Livestock Disease Control. These laboratories provide invaluable services to veterinary meat inspectors by confirming diagnoses, and in checking potability of the water supply at all State inspected establishments.

TABLE 1
Meat Inspection Laboratory Report—1960

Products	Passed	Not Passed	Not Classified	Total
Meat and meat products	2,346	394	23	2,763
Edible oils and fats	66	3	1	70
Feeding materials	162	22	2	186
Spices, cereals, condiments	261	15	1	277
Miscellaneous	43	3	0	46
Totals	2,878	437	27	3,342

Samples not in suitable condition for proper analysis.

Foreign Cold Storage Meat

During the year, 63,980,324 pounds of foreign cold storage meat were imported into California, a tremendous drop from the all-time high reported last year of 90,097,517 pounds. This annual decrease of 29 percent was the first decline since 1953.

This meat, consisting of beef, mutton, veal, lamb, rabbits and pork, was imported from Australia, New Zealand, Mexico, Nicaragua, Costa Rica, Honduras, and Ireland. A total of 258,791 pounds of it failed to qualify as Inspected and Passed due to contamination and spoilage. Of the meat which failed to pass inspection, the largest amount was refused entry and returned to country of origin, some forwarded to pet food plants, and the balance sent to renderers after condemnation at the option of the importer concerned.

Foreign cold storage meat required 2,610 hours for inspection, the traveling of 5,499 miles incident to the inspection, and the collection of \$9,611.73 in inspection fees.

TABLE 2
Foreign Cold Storage Meat—Licenses
Issued and Fees Collected—1960

Type of License	Number	Fee	Total
Retail	196 @	\$10	\$1,960.00
Wholesale	113 @	25	2,825.00
Importer	28 @	25	700.00
Restaurant	17 @	5	85.00
Total License Fees Collected			\$5,570.00

Effective July 1, 1960 the license requirements on retailers and eating places selling foreign cold storage meat were removed in accordance with the State law approved during the 1959 session of the Legislature.

Approval of Construction Plans

Building plans and specifications for sixty-four projects for new or remodeled establishment construction were approved during the year. Included in the sixty-four approved projects were twenty drawings for entirely new establishments.

Violations

During 1960 minor violations of the meat inspection provisions of the Agricultural Code resulted in eleven investigational hearings and the issuance of forty-nine notifications of violation. More serious violations resulted in \$150 in fines, 270 days in suspended jail sentences, and the imposition of two years probation to offenders.

Condemnation Summary

Under State inspection 3,874,709 pounds of meat and meat products were condemned as unfit for food. This figure included 7,532 entire carcasses and 320,447 parts condemned on post-mortem inspection, and 822,181 pounds of processed products. A total of 309 animals were condemned on ante-mortem inspection. Under State Approved Municipal inspection in San Francisco, 9,991 pounds of processed meat products were condemned.

There were 454 cattle and calves retained for *Cysticercus bovis* (the intermediate stage of the human tapeworm, *Taenia saginata*), a decrease of 68 under last year. The majority of cattle carcasses exhibiting these parasites are from areas along the Mexican border.

A total of 29 entire carcasses (17 swine and 12 cattle) were condemned for tuberculosis. One hundred and forty-six parts from cattle, calves, and swine were condemned for tuberculosis.

During the year 49,427 cattle livers were condemned for abscesses and 77,364 cattle livers were condemned for fluke infestation. These two causes alone accounted for 1,323,910 pounds, or almost 662 tons, of condemned beef livers. Thirty-six and one-half percent of all cattle livers inspected were condemned for abscesses or flukes, an increase of 9 percent over the two previous years.

Table 3 shows the number of animals slaughtered at State and Federal establishments in 1960, and the number of whole carcasses condemned.

TABLE 3
Condemnation Summary for California—State and Federal—1960

Species	State Inspection		Federal Inspection		Total	
	Inspected	Condemned	Inspected	Condemned	Inspected	Condemned
Cattle	474,494	1,679	1,996,374	4,624	2,470,868	6,303
Calves	228,806	1,059	250,906	1,511	479,712	2,570
Sheep	617,840	4,489	1,821,452	17,991	2,439,292	22,480
Swine	186,175	290	1,455,687	2,742	1,641,862	3,032
Goats	2,513	15	—	—	2,513	15
Totals	1,509,828	7,532	5,524,419	26,868	7,034,247	34,400

Number and Pounds of Carcasses Condemned for Various Diseases and Conditions

California State Meat Inspection—1960

Disease	No.	Cattle	No.	Calves	No.	Sheep	No.	Swine	No.	Goats	No.	Total
Actinomycosis	13	6,031	—	—	—	—	—	—	—	—	13	6,031
Anaplasmosis	10	5,538	—	—	—	—	—	—	—	—	10	5,538
Arthritis and Other Bone Diseases	17	6,485	18	1,248	145	6,570	13	1,722	—	—	193	16,025
Asphyxia	—	—	2	116	2	95	—	—	—	—	4	211
Caseous Lymphadenitis	1	300	—	—	2,066	96,171	—	—	—	—	2,067	96,471
Coccidioid Granuloma	1	425	—	—	—	—	—	—	—	—	1	425
Contamination	6	4,900	1	35	—	—	—	—	—	—	7	4,935
Cysticercosis	4	2,039	—	—	7	359	—	—	—	—	11	2,398
Cystitis	6	3,092	1	80	1	45	—	—	—	—	8	3,217
Dropsical Diseases	31	15,883	4	560	3	125	3	431	—	—	41	16,999
Emaciation	46	16,972	374	16,517	1,255	52,366	—	—	8	365	1,883	86,220
Erysipelas	—	—	—	—	—	—	1	100	—	—	1	100
Hemorrhagic Septicemia	3	1,665	2	120	—	—	—	—	—	—	5	1,785
Hepatitis	5	2,197	—	—	—	—	—	—	—	—	5	2,197
Icterus	4	1,539	77	4,430	241	11,502	69	9,760	—	—	391	27,231
Immaturity	—	—	318	13,579	1	35	—	—	—	—	319	13,614
Injuries	41	19,863	16	962	21	1,026	8	1,212	—	—	86	23,063
Leptospirosis	—	—	—	—	—	—	1	185	—	—	1	185
Melanosis	3	1,440	2	276	1	45	1	150	—	—	7	1,911
Metritis	112	58,228	—	—	18	874	2	507	—	—	132	59,609
Miscellaneous	4	1,596	—	—	—	—	—	—	—	—	4	1,596
Neoplasms	167	75,585	3	287	3	184	1	178	—	—	174	76,234
Nephritis	35	16,243	6	438	12	606	7	1,093	—	—	60	18,380
Omphalophlebitis	—	—	16	965	—	—	—	—	—	—	16	965
Parasitic Diseases	—	—	—	—	1	65	—	—	—	—	1	65
Pericarditis	313	147,304	2	235	23	1,108	—	—	—	—	338	148,647
Pneumonia	268	122,793	169	15,233	461	20,772	88	13,401	2	73	988	172,272
Pregnancy	15	6,942	—	—	2	125	—	—	—	—	17	7,067
Sarcosporidiosis	6	2,909	—	—	—	—	—	—	—	—	6	2,909
Septicemia	551	266,337	45	4,543	226	10,272	47	7,555	5	280	874	288,987
Sexual Odor	—	—	—	—	—	—	31	6,807	—	—	31	6,807
Skin Diseases	—	—	—	—	—	—	1	157	—	—	1	157
Toxemia	5	2,339	—	—	—	—	—	—	—	—	8	2,449
Tuberculosis	12	5,766	3	110	—	—	17	2,969	—	—	29	8,735
Totals	1,679	794,411	1,059	59,734	4,489	202,345	290	46,227	15	718	7,532	1,103,435

Bureau of Poultry Inspection

L. E. BARTELT, D.V.M., Chief

H. W. STAGGS, D.V.M., Assistant Chief

California has been operating under a state poultry inspection law since July 1, 1956.

The Bureau of Poultry Inspection enforces state laws and regulations adopted to assure consumers that poultry and rabbit meat purchased in California is wholesome. Products inspected and passed for wholesomeness bear the Department's inspection label on the container or such labels are attached to the carcasses.

Specifically, the laws and regulations enforced by the Bureau pertain to the sanitary processing of poultry and rabbit meat, inspections for wholesomeness, and enforcement of minimum construction and equipment requirements of processing plants, and the licensing of poultry packing plants.

Processing

During 1960, poultry processing plants operating under state supervision processed 72,831,186 pounds of ready-to-cook poultry. An undetermined amount was sold as New York dressed (dressed but not eviscerated) poultry. The weight of New York dressed poultry is not required to be reported.

TABLE 1
Summary of Poultry Condemned
Jan. 1-Dec. 31, 1960

Class	Birds condemned	Total pounds condemned
Chickens	293,309	876,394
Turkeys	5,388	41,806
Rabbits	6,861	28,258
Other Classes	1,877	4,353
including squabs, ducks and pheasants		
Total	307,435	950,801

TABLE 2
Summary of Poultry Processed
Jan. 1-Dec. 31, 1960
Ready-to-Cook Weight Total

Chickens	62,590,566 lbs.
Turkeys	5,726,255 lbs.
Rabbits	3,346,882 lbs.
Other Classes, including squabs ducks, and pheasants	1,167,483 lbs.
Total	72,831,186 lbs.

Condemnation Summary

During 1960, poultry meat inspectors condemned 950,801 pounds of poultry meat as unwholesome or unsound.

Enforcement Activities

In order to prevent the sale of uninspected poultry meat, bureau fieldmen occasionally check retail stores.

Many producer-operated plants operate under the exemption provisions in Section 375.6 of the Agricultural Code. Plants so operated are not required to comply with the State's poultry plant sanitary requirements, nor is there a requirement that the poultry meat processed in such plants be inspected for wholesomeness.

Persons operating under the exemption provision must slaughter and dress poultry which they have produced and sell such poultry carcasses through retail channels only. Considerable attention was given these plants to make certain that the processors did not process poultry they had not produced, nor sell poultry through wholesale channels.

Bureau personnel conducted 1,845 inspections of exempt processing plants and retail stores, and conducted 23,139 official inspections of licensed poultry processing plants.

During 1960, the Director of Agriculture temporarily suspended, pending administrative hearings and decisions, the poultry meat inspector licenses of four persons charged with passing poultry meat as wholesome when it was diseased. In all cases hearing officers from the Division of Administrative Procedure found the charges to be true and recommended that the Director revoke the defendants' suspended licenses. That action was taken.

One scheduled administrative hearing was cancelled when the respondent, charged with operating an unsanitary plant, remodeled his plant.

As the year closed, two administrative hearings were pending. In one case, the re-

ndent was charged with intimidating and
erfering with a bureau employee in the
formance of his duty. In the other, the
ndonent was charged with passing some
pounds of diseased poultry as whole-
ne.

One case was pending trial. The defend-
was charged with mislabeling non-kosher
ultry carcasses as kosher.

four informal hearings were conducted.
e persons involved were charged with
erating their plants in an unsanitary man-
er, or operating them without a poultry
at inspector. In each case, compliance
h the law was obtained.

Eighty-eight notices of violation were is-
d, 36 for insanitary conditions within the
nts, 29 for inadequate inspection of poul-
meat for wholesomeness, 14 for mislabel-
g, and 9 for miscellaneous reasons.

Approval of Plans

State poultry inspection laws require that
ns or blueprints for the construction or
odeling of poultry plants be approved
the Bureau prior to construction. Fifty-
e sets of plans were submitted to the
reau for approval. Fourteen were disap-
proved.

Labeling

Prior approval is required for the manner
which the State poultry meat inspection
end is to be used by the plant. Labels
aring the inspection mark, and other in-
ormation, are also checked for misleading
d deceptive statements before approval is
ren.

During 1960, 551 labels and sketches of
oposed labels were received of which ap-
proximately 409 were approved in final
em.

Licensing

As of December 31, 1960, 399 poultry
rocessing plants were licensed by the bu-
au. Nine hundred ninety-nine licenses
re issued to poultry meat inspectors.

TABLE 3
Licenses Issued and Fees Collected
Jan. 1-Dec. 31, 1960

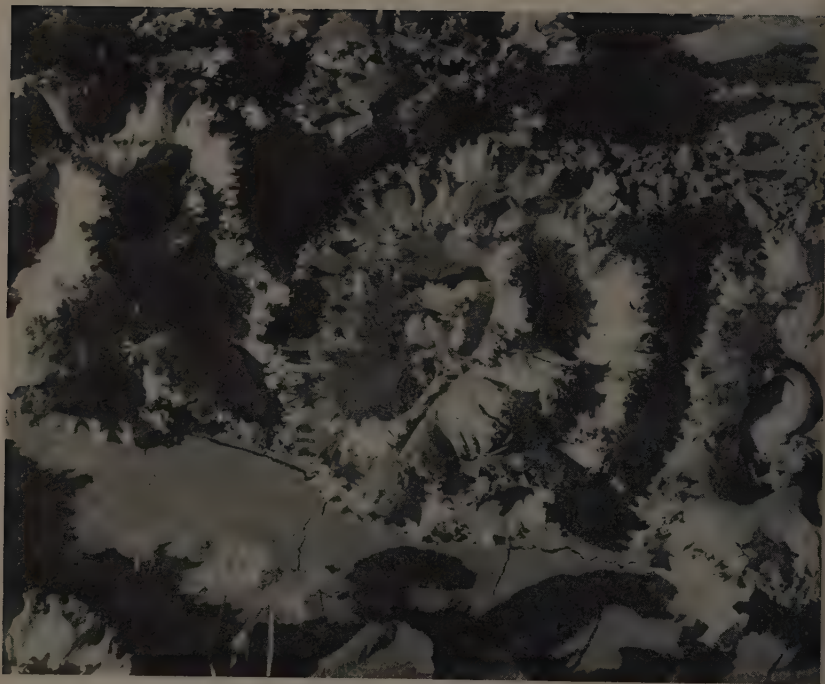
Type of License	No.	Fee	Total
Poultry Meat Inspector's License	103	\$10	\$1,300
Poultry Meat Inspector's Renewal License	774	5	3,870
Poultry Meat Inspector's Renewal Penalties	74	5	380
License to Operate a Poultry Plant	411	40	16,520
Miscellaneous			390
Total			\$22,460

Training of Inspectors

In accordance with provisions of the poul-
try inspection laws requiring the Bureau to
give training courses for instruction and
guidance of poultry meat inspectors from
time to time, lecture-type programs were
presented at 26 night meetings throughout
the State. Four hundred ninety-nine poultry
meat inspectors and other interested persons
attended. Lectures were given on the causes
of spoilage, chilling methods and sanitary
processing procedure and approved types of
poultry processing equipment. Training on
wholesomeness inspection was also given.
Films, slides and charts were used as train-
ing aids.

Changes in Processing Methods

The shift in the method of processing of
poultry meat, which began in 1959, con-
tinued through 1960. A growing number of
small plants no longer kill or eviscerate
poultry. These plants now buy eviscerated
poultry from larger plants and process the
poultry meat further. The bulk of this fur-
ther processing has always involved the cut-
ting up, repacking of poultry carcasses, or
both operations. However, during the last
year, an increasing amount of poultry meat
is being used in newly developed products.
During the past year, an increase was noted
in the number of state licensed plants which
offered such items as breaded chicken, quar-
ter turkey roasts, stuffed breast of chicken,
rice and chicken burritos, smoked turkey
loaf, turkey steaks, marinated chicken,
chicken witches, cocktail tacos, turkey pat-
ties, and turkey sausages.



Lettuce—near Santa Maria.

DIVISION OF MARKETING

J. FRANK BENNETT, *Chief*

Many substantial changes were made in the Division of Marketing in 1960.

Due to a constantly increasing work load, the Division, as organized, was under a constant strain to provide the administrative assistance and guidance required in the proper conduct of its functions. As a result, the Division of Marketing was divided, effective January 1, 1960.

The Division retained the Bureaus of Markets, Milk Stabilization, Market Enforcement and Weights and Measures.

The Division of Marketing Services was created, and included the Bureaus of Fruit and Vegetable Standardization, Shipping Point Inspection, Agricultural Statistics and Market News.

Activities of the Bureau of Milk Stabilization, formerly known as the Bureau of Milk Control, were greatly increased.

California's dairy industry was perplexed with many important problems in 1960. Two years of sub-normal rainfall had caused costs of production to mount higher than the prices paid producers by milk distributors. In spite of this situation, a troublesome surplus of milk existed, and sales of milk per capita declined.

Director William E. Warne appointed four committees of dairy industry leaders to work with the staff of the Department to study the problems facing the dairy industry and to suggest solutions.

These four committees consisted of groups representing market milk producers, manufacturing milk producers, market milk processors and manufacturing milk processors.

The report of the Bureau of Milk Stabilization details the work of these committees and the successful results obtained from their cooperative efforts to help the entire milk industry of California.

An expanded program was developed for the Bureau of Weights and Measures involving the establishing of standards of procedure and operating methods incident to the testing of consumer packages sold on a pre-packaged basis where weight or measure was involved.

The weights and measures program also involved the recruiting of necessary personnel to coordinate the activities under the new methods of operation, and the training and coordination of County Sealers of Weights and Measures into an integrated program.

Later in the year, the Department underwent a complete reorganization and the Division of Marketing was again changed. The Bureaus now in the Division are Markets, Market News and Agricultural Statistics.

The reorganization of the Department was for the purpose of placing into Divisions those functions which had a like purpose and nature, and employees performing comparable duties. It was believed that an organization based on these concepts would be more efficient and would provide a more effective operating basis.

Considerable work remains to be done in order to put into effect the proposals advanced in the reorganization plan, and to achieve the purposes set forth in them.

Bureau of Agricultural Statistics

W. WARD HENDERSON, *Chief*

JOE E. MULLIN, *Assistant Chief*

The Bureau of Agricultural Statistics is a service agency responsible for collecting and disseminating official statistics and information relating to production, utilization, value, and inventories of California's many crop and livestock enterprises.

It is supported jointly by the California and United States Departments of Agriculture.

In agricultural circles it is more familiarly known as the California Crop and Livestock Reporting Service.

Agricultural Statistics Popular

In 1960 this bureau published and distributed nearly 500,000 copies of some 390 individual reports relating to the State's agriculture. In addition, the bureau serviced 5,900 individual requests for special information in answer to inquiries made by telephone, letter, and personal visits. Demand for and interest in information concerning the statistical situation of the State's agriculture continued very active. This interest is attributed to competitive pressures in agriculture and increasing emphasis on marketing of agricultural products. The bureau is cognizant of an interest in and demand for more accurate and more detailed statistics, and it is altering its program where necessary to satisfy this need. There is an especially keen interest in probability sampling and objective measurements for crop forecasting. Several industry groups are following this work with interest.

Source of Agricultural Statistics

The basic information for these statistical reports is obtained on a voluntary basis from thousands of farmers, stockmen, hatcheries, dealers, processors, warehousemen, transportation firms, merchants, marketing organizations, and others identified with the State's agricultural industry who make reports directly to this office. The bureau receives substantial assistance from the county agricultural commissioners in the accumulation of basic statistics. In addition, considerable information is received from other state and federal agencies.

Objective Sampling Maturing

Objective sampling techniques made considerable progress in 1960. Forecasts based on these techniques, both operational and experimental, provided very encouraging results during the year. These studies continued to be carried on jointly and with the technical assistance of the Giannini Foundation of the University of California.

Clingstone peach, grape, walnut, and lemon projects were operated by the bureau in 1960. These projects were financed by state funds; federal funds, including those made available under the Research and Marketing Act; and monies provided by the interested industry groups. The bureau consulted with the Date Administrative Committee and prepared for them a sampling scheme for objective counts and measurements on dates. Through this initial work, it is hoped that a forecasting model can be established for this crop and that in time it can be included as an operating project of the bureau.

Because multiple regression formulas showed promise in 1959, this statistical tool was further tested in 1960 as a basis for relating objective counts and measurements to final production. The results from this approach in 1960 indicated that this method shows considerable promise.

The cotton yield objective measurement work was doubled in 1960. Monthly boll counts were made in 100 fields, and growth studies of cotton plants and bolls were continued for the second successive year. The objective of this program is to develop a forecasting model which will provide highly accurate forecasts of cotton production prior to harvest. This work is part of a Nationwide program conducted by the Crop Reporting Board of the United States Department of Agriculture.

Marketing Service Work Stepped Up

Enumerative surveys of fruit and nut acreage continued in 1960 under matched fund financing. These surveys, carried on in cooperation with the county agricultural commissioners, provide detailed statistics of bear-

ing and non-bearing acreage by variety and age for the State's many fruit and nut crops.

The raisin lay survey to establish an end-of-season estimate of raisin-type grapes was made in late September. In contrast to the 1958 and 1959 season, there was no adverse weather during the raisin making season. Absence of this complicating factor facilitated preparation of an accurate estimate in 1960. This survey was financed in a large part by funds advanced by the Raisin Administrative Committee, which needs accurate data on the size of the raisin crop for making marketing decisions and the pooling of surplus raisins, if any.

The enumerative survey of strawberry acreage by age of planting was conducted for the fourth year. The field work was partly financed by the Strawberry Advisory Board. The bureau received the cooperation of the county agricultural commissioners in Monterey, Santa Cruz, and Santa Clara counties in this survey. These annual reports have proven very popular in the industry since they provide growers and those interested in marketing with an accurate measure of potential production.

A survey of the State fruit tree nurseries to establish the sales of freestone peach, nectarine, pear, and plum trees by varieties was made again in 1960. These special annual reports meet a need for information on trends in planting and varieties of these fruits being used. This work is carried on with the assistance of the California Tree Fruit Agreement.

Crop Reporting Takes to the Air

Following a pilot study in 1959, the bureau participated with the Wine Advisory Board in experimental surveys to establish the quantity of natural raisins dried by specified dates during the raisin making season. Aerial photographs made in five flights, each of a total length of about 250 miles, were used in this project. A commercial photographer flew over the principal raisin producing area between Madera and Kingsburg during the day and provided crews from the bureau with photographs late in the afternoon. Working through the night, trained personnel scanned photographs and, through a sampling procedure, determined the number of acres in which grapes had been cut for raisins at the time of the survey. Tray counts were made in a subsample of vineyards. A report containing an esti-

mate of the number of acres laid to raisins was ready for release by 9 o'clock the morning following the day on which the flights were made. Individual reports were issued on August 27 and September 3, 7, 12, and 20. The purpose of the reports was to keep the grape industry informed as to the rate of harvest of grapes for raisins. Since about one-third of the raisin grapes are crushed, this type of information can aid in more equitable distribution of raisin grapes between wine and raisins. Statistically, the reports proved to be quite accurate and they were well received in industry circles. Plans for a 1961 survey are being made.

Status of New Statistical Work

Work with the county agricultural commissioners on a standard statistical program made further progress in 1960. Standardized report forms for basic agricultural statistics were being used by most of the counties. Some who were not utilizing the standard form in published reports were preparing a supplementary report for reference in the state department. During 1960 the bureau increased its activities in assisting county personnel with the preparation of these annual reports and began conducting a series of classes for county people in this connection. The staff of the County Estimates Group in the bureau was increased by an additional full-time professional employee.

The monthly cattle on feed program, financed with federal funds, completed its first year of operation during 1960. These monthly reports have proven to be very popular and have been quite helpful to cattle feeders in planning their marketings. These reports originally started at the request of the cattle feeding industry.

In late 1960, a new series of reports of sheep and lambs on feed was inaugurated as part of a new federal statistical program. The purpose of this work was to supply the sheep industry with accurate information concerning the numbers of sheep and lambs being fattened for slaughter. These reports are prepared as of November 1, January 1, March 1, and June 15. Because the feeding of lambs is done on a large number of farms in the State, it was not possible to enumerate all operators with financing available. A list sampling technique was used to sample the smaller flocks. In the January and June surveys, all large flock operators who do not respond by mail are contacted to obtain in-

formation relative to their inventories, feeding operations, and wool production. In each of the four surveys all commercial lamb feeders are contacted to obtain their inventories and marketings because this segment handles about four-fifths of the lambs fed in this State. These special surveys have helped to improve basic sheep statistics by providing a larger sample of sheep operators than was previously available through selective mailed sampling.

Special federal funds made possible the inauguration of monthly reports on celery acreage. Emphasis was placed on acreage being planted each month and an inventory of the acreage in the ground. Similar surveys are being made in Florida, which ranks second to California as a producer of celery. These reports have been well received and provide the vegetable industry with a type of market flow information that has proven to be quite valuable.

Crop Output Near Record

The total production of crops from California farms in 1960 was 31,108,900 tons, only about 3 percent less than the record tonnage produced in 1959. Total acreage harvested was estimated at 8,644,600 acres, about 2 percent less than the record large acreage harvested in 1954. This high level of production by California's efficient farmers brings into focus the tremendous expansion in agriculture that has occurred in this State. Crop production in 1960 was 10 percent greater than the 1950-59 average, 42 percent more than the 1940-49 average, and nearly double average production in the 1930's.

The high level of production in 1960 was sustained in what climatologists and agriculturists consider a dry year. This output was achieved because the bulk of the State's crop production is from irrigated land. The fact that California's two highest producing years—1959 and 1960—were years of deficient rainfall emphasizes the importance of irrigation to the State's economy.

The shortage of rainfall was the most damaging of the adverse weather conditions in 1960 and had its most dramatic effects on dry-farm crops and dry-land pasture. There were local frosts which resulted in damage to fruit crops, particularly in the north coast area and the Sierra foothills. Drought conditions and above normal temperatures

during the summer had an adverse effect on fruit crops in localities deficient in reserve moisture. Yields of cotton were reduced by delayed growth during the cool spring, excessive shedding during periods of high temperatures in summer months and rain and fog at picking time. High temperatures affected sugar beets adversely but other field crops suffered no serious effects. Vegetable production was sustained at a high level and suffered no significant losses due to weather.

Crop Values Also High

Near record production maintained crop value at a high level. Preliminary estimates of farm value indicate 1960 crops were worth \$1,904,313,000, 2 percent less than the record established in 1959. The general level of prices was slightly higher than in 1959, but there was considerable variation between commodities. These values do not include livestock, dairy and poultry items nor the value of flower and nursery products, which are not available at this time.

These value estimates do not represent net income to farmers and are not comparable with cash receipts from farm marketings which are computed on a calendar year basis. The value of crops produced is the gross value and includes all of the farmer's production expenses. In recent years two dollars of every three received by farmers have gone to meet out-of-pocket production costs.

Field Crop Production Second Largest

Field crop production in 1960 totaled 17,820,400 tons, only 3 percent less than the record tonnage harvested in 1959 and 16 percent above the 1949-58 average. Lower production of corn, wheat, flaxseed, beans, sugar beets, field seeds, and hops were primarily responsible for the drop in output from 1959 levels. Rice and hay advanced to new records. The production of cotton and potatoes was higher in 1960 than in 1959.

The value of field crops in 1960 is estimated at \$912,488,000, only one percent less than in 1959. Values were down from 1959 for many crops due to a combination of lower production and less favorable prices. Values of corn, beans, flaxseed, and hops showed the sharpest declines. Only cottonseed and hay increased substantially. Cotton continued as the State's most valuable crop, reaching an all time high of \$351,460,000 in 1960.

Fruit and Nut Production Drops 7 Percent

California fruits and nuts produced during the 1960 season totaled 7,020,500 tons, 7 percent below the tonnage harvested during the 1959 season, but 2 percent above the 1949-58 average. Apricots, avocados, cherries, Desert Valley grapefruit, lemons, nectarines, walnuts, and olives produced larger crops than in 1959. Production of cling peaches was equal to that of 1959, but the production of all other commodities in this group was lighter than in the previous year.

The production of deciduous fruits was the third largest of record in spite of smaller crops than a year ago for apples, freestone peaches, pears, and plums. Total production of grapes and tree nuts continued at high levels, but the output of citrus was down sharply due to smaller orange crops. The Desert Valley grapefruit and the lemon crops were the second largest of record. A record large avocado crop was harvested, and the preliminary estimate of olive production indicates the crop equalled the record of 70,000 tons set in 1956. Dried fig production continued to decline, reaching the lowest level since 1931.

The value of fruits and nuts was \$553,066,000, 4 percent below last year but 12 percent above the 1949-58 average. Light production resulted in higher prices than a year ago for some crops. Apples, oranges, pears, plums, prunes, almonds, and walnuts brought significantly higher average returns than in 1959.

Vegetable and Melon Production Up

California produced 6,268,000 tons of vegetable, melon and strawberry crops during the 1960 harvest season. This is 4 percent above 1959 and 19 percent above the 1949-58 average. Larger acreages and high yields from lettuce and processing tomatoes accounted for most of this increase over 1959. However, production of garlic, watermelons, cauliflower, artichokes, asparagus, processing snap beans, and processing lima beans was also considerably heavier than in 1959. Production of carrots and onions dropped sharply in 1960. There were substantial decreases in market tomatoes, cantaloupes, fresh market snap beans, sweet corn, bell peppers, celery, strawberries, and spinach.

The value of California vegetable, melon and strawberry crops totaled \$438,319,000 last year, 2 percent below the record established in 1959. Lower average prices for

early fall tomatoes, late fall celery, summer and early fall lettuce, and winter carrots were primarily responsible for the reduction in total value.

Milk and Beef Trend Up.

Milk production continued its upward climb in 1960, increasing about 2 percent over the previous year. Production per cow continues to rise.

By January 1, 1961 total cattle population in the State had reached a record high of 4,203,000 head. The expansion in recent years is due almost entirely to the increase in beef herds and feedlot cattle.

Cattle feeding continues to grow and ranks as one of the State's most important agricultural enterprises. On November 1, 1960 there were a record 783,000 head being fattened in commercial feedlots in California. This compares with the 1959 high of 683,000 head recorded November 1 a year earlier. The sale of cattle and calves was the most important single source of farm income in California in 1960, exceeding dairy products for the third successive year.

Poultry Production at Record Levels.

Egg production reached a record high of 5.7 billion eggs in 1960 due to another increase in layers. Egg prices were somewhat higher than the extremely low prices of 1959 but were still well below the levels of other recent years. Income from eggs will be higher than in 1959 but still unsatisfactory to most poultrymen.

Placements of broiler chicks in California increased about 7 percent in 1960, and production of broilers and fryers is expected to exceed the record of 169 million pounds produced in 1956. A record large number of chicks was hatched by the State's hatcheries in 1960.

Turkey production was up 11 percent over 1959, and producers marketed 14.5 million birds in 1960. With prices up slightly, gross income from turkeys rose 15 percent to \$71,078,000. California ranked first among the states in turkey meat produced in 1960.

National Parity Ratio Continues Decline.

The Parity Ratio, an index measuring the economic welfare of the Nation's agriculture, dropped to 80 in 1960, its lowest point in the post-World War II era. The Index of Prices Paid by Farmers, which has been inching steadily upward since 1955, reached a new high last year. This increase reflected

the rising trend in prices, taxes, and wages paid by farmers. Farm prices declined despite rising costs and the Index of Prices Received by Farmers was down to 238 in 1960. These statistics portray the cost-price squeeze that has plagued agriculture since 1953.

While California has been adversely affected by rising costs and lower prices, certain economic advantages have cushioned the impact of these economic trends. First, California produces a wide diversity of agricultural commodities which tends to stabilize farm income. Second, mechanization and cultural advantages place California agriculture in a strong competitive position. Third, California producers have been able to increase income by both horizontal and vertical expansion.

Farm Income Shows No Improvement in 1960.

Rising costs prevented net income from farming in California from making any gains

in 1959 and 1960 in spite of the fact that cash receipts from farming exceeded \$3 billion. Production expenses in 1959 were 25 percent higher than the average of the years 1950-52, the most recent period in which farming costs and cash receipts were considered in balance. This rise in farm expenses has caused net income to decline as cash receipts from farming have increased only 16 percent in the same period. Total net income from farming in 1959 was \$100 million less than it was in 1951, the highest year of record.

While the total net farm income in 1959 was an impressive \$1,042,600,000, this figure does not represent net profit to farm operators. From this sum farmers must deduct their own wages (and wages of other members of their families) and interest charges for the capital they have invested in farming.

TABLE 1
Harvested Acreage of Principal Crops in California

Year	(Acres)			
	Field Crops	Fruit and Nut Crops	Vegetable and Melon Crops	Total All Crops
1930-39 average	4,972,300	1,517,900	511,100	7,001,300
1940-49 average	5,850,200	1,482,400	584,000	7,916,600
1950	6,375,500	1,385,700	604,000	8,365,200
1951	6,427,400	1,356,100	660,700	8,444,200
1952	6,776,500	1,329,300	632,800	8,738,600
1953	6,868,500	1,310,200	615,800	8,794,500
1954	6,886,500	1,288,400	619,800	8,794,700
1955	6,660,700	1,245,000	666,900	8,572,600
1956	6,664,500	1,214,300	716,900	8,595,700
1957	6,636,200	1,187,000	697,500	8,520,700
1958	6,669,800	1,196,100	696,600	8,562,500
1959	6,716,200	1,197,000	698,200	8,611,400
1960 preliminary	6,729,800	1,203,400	711,400	8,644,600

TABLE 2
Production of Principal Crops in California

Year	(Tons)			
	Field Crops	Fruit and Nut Crops	Vegetable and Melon Crops	Total All Crops
1930 39 average	8,646,300	5,317,940	2,022,800	15,987,040
1940-49 average	11,445,550	7,033,380	3,444,800	21,923,730
1950	15,100,300	6,511,900	4,068,000	25,680,200
1951	13,075,100	7,768,600	5,390,000	26,233,700
1952	14,017,200	7,039,300	5,185,000	26,241,500
1953	15,008,500	6,813,500	4,968,000	26,790,000
1954	16,827,900	6,381,500	4,916,000	28,125,400
1955	15,951,500	7,393,100	5,614,000	28,958,600
1956	16,209,800	7,186,700	6,571,500	29,968,000
1957	17,637,300	6,683,900	5,821,500	30,142,700
1958	16,841,800	6,352,900	6,318,200	29,512,900
1959	18,345,400	7,566,500	6,031,900	31,943,800
1960 preliminary	17,820,400	7,020,500	6,268,000	31,108,900

TABLE 3
Value of Principal Crops in California
(Thousand Dollars)

Year	Field Crops	Fruit and Nut Crops	Vegetable and Melon Crops	Total All Crops
1930-39 average	\$133,142	\$161,840	\$79,562	\$374,544
1940-49 average	438,071	456,532	231,336	1,125,939
1950	685,390	509,572	287,277	1,482,239
1951	895,938	505,646	381,330	1,782,914
1952	946,211	449,899	377,495	1,773,605
1953	778,648	458,066	369,428	1,606,142
1954	800,525	473,786	367,799	1,642,110
1955	744,086	541,219	408,568	1,693,873
1956	833,074	579,908	430,152	1,843,134
1957	793,116	518,679	429,236	1,741,031
1958	808,239	552,704	420,635	1,781,578
1959	919,285	577,768	449,529	1,946,582
1960 preliminary	912,488	553,506	438,319	1,904,313

TABLE 4
Cash Receipts from Farm Marketings of Livestock and Livestock Products in California
(Thousand Dollars)

Year	Dairy Products	Cattle and Calves	Poultry and Eggs	Other ¹	Total Value
1930-39 average	\$75,908	\$46,992	\$46,831	\$24,869	\$194,600
1940-49 average	194,250	152,980	141,452	60,723	549,405
1950	237,042	305,755	221,253	83,575	847,625
1951	280,016	417,582	293,479	105,575	1,096,652
1952	320,723	353,973	276,089	89,204	1,039,989
1953	326,593	257,826	311,121	78,186	973,726
1954	300,870	274,914	250,928	78,825	905,537
1955	313,076	298,858	266,186	70,489	948,609
1956	331,471	326,567	263,575	71,368	992,981
1957	355,353	336,352	244,996	69,325	1,006,026
1958	349,689	384,715	263,617	72,150	1,070,171
1959 preliminary	375,979	445,173	243,543	57,816	1,122,511

¹ Sheep and lambs, hogs, wool, honey, bees, beeswax, mohair, rabbits, horses, mules, and minks.

TABLE 5
January 1st Livestock Inventories in California
(Thousand Head)

	1940-49 average	1958	1959	1960	1961
All cattle	2,748	3,633	3,933	4,121	4,203
Cattle on feed	166	405	511	665	712
Milk cows	827	927	908	899	899
Sheep and lambs					
Stock sheep	2,398	1,616	1,600	1,712	1,763
On feed	163	275	318	361	289
Hogs	819	416	383	377	340
Horses and mules	170	71	70	68	— ¹
Farm chickens ²	18,513	29,277	31,397	33,256	36,568
Turkeys over 4 months old	1,120	1,548	1,540	1,615	2,099

Discontinued.

Does not include commercial broilers.

TABLE 6
Farm Price Indexes
United States—1930-59

Year	Index of prices received by farmers (1910-14 = 100) percent	Index of prices paid by farmers (1910-14 = 100) percent	Farm parity ratio percent
1930-39 average	97	125	78
1940-49 average	203	191	105
1950	258	256	101
1951	302	282	107
1952	288	287	100
1953	255	277	92
1954	246	277	88
1955	232	276	84
1956	230	278	83
1957	235	286	82
1958	250	293	85
1959	240	297	81
1960 preliminary	238	299	80

TABLE 7
Cash Receipts, Production Expenses and Net Farm Income
California—1950-59

Year	Receipts from farming (mil. dol.)	Farm production expenses (mil. dol.)	Total net farm income ¹ (mil. dol.)
1930-39 average			
1940-49 average			
1950	\$2,311.0	\$1,550.9	\$901.5
1951	2,786.9	1,845.4	1,143.1
1952	2,742.0	1,830.1	1,139.7
1953	2,650.0	1,751.0	993.0
1954	2,531.8	1,765.1	950.6
1955	2,662.2	1,784.9	1,003.7
1956	2,841.0	1,898.6	1,069.5
1957	2,754.0	1,870.1	964.1
1958	2,859.0	2,037.6	995.4
1959	3,034.6	2,169.3	1,042.6
1960 preliminary	3,054.2		

¹ Includes value of home consumption, rental value of farm dwellings and changes in value of inventories.

² Not available.

Bureau of Fruit and Vegetable Standardization

R. WHIPPLE, Chief

T. MILLER, Assistant Chief

The purpose of standardization inspection is to maintain and improve the quality and reputation of California agricultural products in the markets of California and the nation.

The consumer is also protected by enforcement of quality standards through the removal of substandard produce from the markets, and prevention of deceptive packaging and labeling.

Quality standards and packing requirements apply to 33 types of fresh fruits, vegetables and walnuts, and to poultry meat, honey and eggs.

The Bureau of Fruit and Vegetable Standardization also conducts three self-supporting functions: canning tomato inspection, seed potato certification, and wine grape inspection.

The purpose of canning tomato inspection is to insure that the tomatoes received are suitable for canning.

Seed potato certification provides California potato growers with disease-free seed potatoes.

Wine grape inspection is designed to provide impartial determination and certification of defects in wine grapes which are harmful to California wine making, and to insure compliance with Federal Food and Drug Administration purity requirements.

The Bureau's total workload in 1960 was 25% greater than the average of the 5 previous years.

Fruit, Nut, Vegetable and Honey Standards

Under the direction of the Bureau, County Agricultural Commissioners and staffs enforce fruit and vegetable standardization laws and regulations.

In 1960, 52 Agricultural Commissioners and their staffs worked 36,052 man days on fruit and vegetable standardization. Inspections were made of the equivalent of 358,530 loads of fruits, nuts and vegetables, an increase of 4.6% over the previous year. These inspections resulted in 10,735 rejections.

Bureau representatives also supervised the inspection conducted by Agricultural Commissioners for marketing order advisory boards pertaining to freestone peaches, plums, and cantaloupes.

Representatives of the bureau and the Agricultural Commissioners cooperated with the State Department of Public Health in a program of radioactive surveillance. There were 147 samples of fruits, nuts and vegetables and 12 samples of eggs collected, packaged in the county of origin and shipped to the Department of Public Health at Berkeley for determination of radioactivity in these products.

At highway inspection stations maintained by the Bureau, the equivalent of 87,201 carloads of produce was checked or inspected. Also, loads of grapefruit, cantaloupes, peaches, lettuce, and plums were checked at these stations for compliance with state marketing orders. This work was done in cooperation with respective commodity marketing order advisory boards.

Standardization Marketing Surveys

Surveys were made pertaining to (1) the maturity of 3 varieties of grapes intended for shipment to fresh markets, (2) packing methods of 12 varieties of freestone peaches and 10 varieties of nectarines, and (3) the maturity of 18 varieties of apples. These surveys are financed equally by the Research and Marketing Administration section of the United States Department of Agriculture, and the California Department of Agriculture.

Egg and Poultry Meat Standardization

There were 75,623 lots of eggs and 19,287 inspections of poultry meat made by Agricultural Commissioners and staffs, and by Bureau inspectors. Rejections totaled 4,140.

Seed Potato Certification

Inspections of potato plants were made on 5,232 acres for initial determination of qualification as certified seed potatoes. At

harvest time official certification tags were placed on seed potatoes harvested from 4,152 acres.

Seed potato test plots were maintained at Half Moon Bay and Oceanside. At the Half Moon Bay test plot, 440 samples were grown and tested in the spring. These samples were obtained from potato seed sources to be planted by growers and entered for certification. At the Oceanside test plot, in the winter, 537 samples from seed potatoes were grown and tested for eligibility as "Foundation Stock Seed Potatoes", the top purity classification.

Canning Tomato Inspection

The Agricultural Code requires that all canning tomatoes be inspected at time of delivery, and a certificate issued if the load meets the quality requirements. Generally speaking, good red coloring was better than in several previous years, and poor coloring was less apparent. The percent of total defects did not change significantly from previous seasons.

The 1960 canning tomato season was the first season in which loads of mechanically harvested tomatoes were inspected. Some 60 loads were harvested mechanically in the Courtland area. Very few loads were harvested mechanically in other areas.

Inspections, conducted at 131 stations throughout the State, total 2,315,499 tons, equivalent to 130,892 loads.

Wine Grape Inspection

This is a voluntary inspection system for wine grapes intended for crushing at wineries, and was performed under regulations of the California Department of Agriculture. Inspections were conducted at 17 California wineries where 13,910 loads were inspected, nearly double the number of loads inspected in the previous year. Official certificates were issued showing the percent decomposition in each load.

An amendment to the Agricultural Code provided additional authority for testing of soluble solids of these grapes where requested. Soluble solids testing was conducted at four wineries.

Bureau of Market Enforcement

H. S. CANN, *Chief*

W. G. SLAWSON, *Assistant Chief*

PART I

The Produce Dealers Act and the Processors Law appear as Chapters 6 and 9, Division 6, Agricultural Code. The Bureau of Market Enforcement is charged with the enforcement of these laws under which handlers of farm products are required to be licensed and bonded in order to engage in the business of commission merchant, dealer, or processor. Brokers, cash buyers and agents also are required to be licensed but are not bonded.

The Produce Dealers Act requires persons who handle farm products on consignment, or who purchase farm products in fresh form for resale, to operate in a faithful and honest manner, and in accordance with the statutory provisions of the Act.

The Processors Law contains similar requirements for persons who purchased or handle farm products for the purpose of manufacture or processing, and who sell the finished product in dried, canned, extracted,

fermented, distilled, frozen, or other preserved form.

These statutes were enacted to protect persons engaged in the production of farm products. Commission merchants are required to render true and proper accounts of sale, and to make settlement thereon, to the consignor. Dealers and processors are required to make payment to producers in accordance with the terms of their contracts, and as provided by law.

The work of the bureau involves investigations of complaints filed by producers against licensees, as well as a continuing supervision of agricultural and shipping centers to insure that persons engaged in handling farm products are properly licensed and bonded, and that general compliance with the statutes is maintained.

The bureau maintains offices at Sacramento, Fresno, Los Angeles and San Francisco. Producers may file their complaints by telephone, letter, or in person at any of these offices. Adjustments and settlements of

controversies between producers and licensees generally are secured either by investigation or informal conference. Hearings are held on verified complaints and, upon the finding of a violation of the statutes, licensees may be subjected to suspension or revocation of license, or to the imposition of probationary terms.

The bureau is supported and maintained by license fees and no charge is made for any of the various services performed for producers under the Produce Dealers Act or Processors Law.

On December 15, 1960, in a general reorganization of the Department of Agriculture, the bureau was removed from the Division of Marketing and placed under the Division of Investigation and Enforcement, and was charged with the enforcement of all marketing orders in effect under the provisions of the California Marketing Act and the auditing for and collection of tonnage taxes on agricultural minerals, fertilizers and commercial feed stuff.

During 1960, the bureau recovered for producers under the Produce Dealers Act, \$429,467.08, in which 546 producers participated. Under the Processors Law, recoveries amounted to \$83,430.82, in which 124 producers participated. The total amount involved under both statutes was \$512,897.90, in which 670 producers participated.

PART II

DETAILS OF FUNCTIONAL ACTIVITIES

SUMMARY OF COMPLAINTS HANDLED—1960

Produce Dealers Act

On January 1, 1960, open complaints totaled 186. During the year, 26 complaints were reopened, 655 new complaints were received, and 612 complaints were closed, leaving 255 open complaints as of January 1, 1961.

Administrative hearings totaled 144: Disciplinary action resulted in 38 licenses issued, 10 licenses revoked, 27 licenses suspended, 30 applications refused and denied, 3 licenses reinstated, 5 licenses placed on probation, 12 complaints dismissed, and 3 actions set aside.

Forty-eight criminal prosecutions of unlicensed operators resulted in 2 jail sentences served, 14 fines assessed, 15 suspended sentences and probation granted, 6 cases dismissed, and 2 cases closed without action.

A total of \$429,467.08 was recovered for 546 producers during the year.

Processors Law

On January 1, 1960, open complaints totaled 56. During the year, 117 new complaints were received, and 130 complaints were closed, leaving 43 complaints open as of January 1, 1961.

Administrative hearings totaled 8: Disciplinary action resulted in 1 license issued, 3 complaints dismissed, 1 license revoked, 1 license placed on probation, and 2 applications refused and denied.

A total of \$83,430.82 was recovered for 124 producers during the year.

Summary

As a summary of all activities under both laws, 242 complaints were open on January 1, 1960. During the year, 26 complaints were reopened, 772 new complaints were received, 742 complaints were closed, leaving 298 complaints open as of January 1, 1961.

The sum of \$512,897.90 was recovered for 670 producers. Of this amount, \$111,271.37 was recovered as the result of 43 demands made on the bonds of dealers, commission merchants and processors.

The bureau issued 14,966 licenses: 12,569 under the Produce Dealers Act to Dealers, brokers, commission merchants, cash buyers, and agents, and 2,397 to processors and agents. On these licenses, administrative hearings were held in 152 cases, resulting in 39 licenses issued, 11 revocations, 28 suspensions, 32 denials of applications, 3 reinstatements, 5 placed on probation, 15 complaints dismissed, and 3 matters set aside.

A condensed summary of the activities of the bureau in the administration of the regulatory statutes assigned to it for a 34-year period, 1927 to 1960 inclusive shows: 25,295 complaints handled, 4,592 administrative hearings held, 805 licenses revoked, 674 licenses denied, and 1,275 criminal prosecutions. As a net result of all activities, the bureau during the 34-year period recovered for growers a total of \$14,717,797.00.

Bureau of Market News

MAX K. JOHNSON, *Chief*

B. G. HILLIS, *Assistant Chief*

The function of the Bureau of Market News is to collect and disseminate impartial, accurate, timely, and useful information for use by agricultural and related industries as an aid to efficient and orderly marketing of farm products.

Administration and financing of the Bureau is a joint operation of the federal and state governments.

California is paying more than half of the present cost of administration.

Dissemination of the information is by mimeographed reports, press and radio wire services, radio, television, personal and telephone contacts, and recorded telephone messages.

Rapid exchange of current market information between offices within the State and throughout the United States is accomplished by state and federal leased wire teletype systems.

Market reports issued by the Bureau cover nearly the entire agricultural marketing field, with only occasional exceptions, such as on nuts, cotton, and many commodities for processing. Price, market condition, statistical, and other related information pertinent to the marketing of the various agricultural products are included on the reports.

In response to industry requests for market coverage of the many agricultural commodities in the various producing districts and at terminals, the Federal-State Market News Service in California has grown from the first seasonal office opened in Imperial Valley in 1915, to 19 field offices, 9 terminal market offices, and an administrative office in 1960. These offices are linked with about 200 market news offices nationally.

New Office in Stockton

Upon industry request, the 1960 state Legislature, and the federal government provided funds for the establishment of a hay and grain reporting office in Stockton. This expansion in service permitted the reporting of country point grain trading in the northern San Joaquin and southern Sacramento Valleys, as well as the reporting of the delivered markets in the Stockton, Modesto-Turlock, and Petaluma areas. Country point

and-delivered market grain trading has been reported for the central and southern San Joaquin Valley since the establishment of an office in Fresno in 1957.

Following the establishment of the grain reporting office at Stockton, the mailing lists for the San Francisco and Stockton grain market reports were combined, and reports were issued from Stockton. Reporting of the San Francisco grain market continued unchanged.

Better coverage of the dry bean markets at the grower level was accomplished with additional reporting from the Santa Maria and the southern San Joaquin Valley sections, thus giving complete coverage in all major bean producing sections.

Publication of the monthly hop report at San Francisco was eliminated due to declining acreage and production trends. In the past several years, hop production has ranged about 7 to 9 million pounds, about one-half that of ten years ago. Information pertinent to California is included in the Portland, Oregon, report.

Truck Shipments Report Expanded

Reflecting the increased significance of truck movement of fruits and vegetables, both interstate and intrastate, the reporting of truck movement for several commodities was expanded. Daily truck movement data, coupled with daily rail shipment information, provides the industry with an indication of supply to aid in making marketing decisions.

At the request of the Summer Head Lettuce Advisory Board, the daily tabulation and reporting of lettuce movement by truck, by producing districts, was begun in late May 1960. Now, virtually complete movement information for all major lettuce producing sections in California is available. Formerly, truck movement information for lettuce by point of origin was limited to the Imperial Valley and Salinas-Watsonville deals.

Truck movement of cantaloups by point of origin in the San Joaquin Valley was recorded for the first time. Also, exploratory

on out-of-state movement of Stockton Delta district asparagus by truck was compared by point of origin to establish the relationship between interstate and intrastate movement.

Reorganization of the central coastal vegetable reporting program permitted economies of operation. Issuance of mimeographed reports from Santa Maria and Salinas was consolidated at Salinas to achieve better coordination of the workload. Furthermore, as permitted publication of additional information with no loss in dissemination time.

Watermelon Prices Reported

Reporting of the Hemet-Elsinore district watermelon market began in August 1960 on an experimental basis, at industry request. Watermelon growers and shippers there claimed the lack of any shipping point market information on watermelons from the district created a depressing market influence on their production. Reports from the district indicate the program tended to equalize prices with other producing districts, and industry representatives asked that the program be continued. This coverage complements previously existing reporting programs for watermelons in the Imperial Valley, the Blythe district of Riverside County, and the San Joaquin Valley.

Because of the lack of funds from Oregon, the seasonal office at Klamath Falls, Oregon, did not operate in 1960, after having operated for the first time in 1959. This office served the potato industry of the Klamath Basin and was jointly financed by three government agencies, the State of California, the State of Oregon, and the U.S. Department of Agriculture.

L.A. Office Moved

Trading at the Los Angeles Union Stockyards terminated April 29, 1960. Dismantling of the stockyard facilities caused the Los Angeles Livestock office to be moved to Cheli Air Force Base, Maywood. Also, the terminal stockyards at Seattle were closed during 1960, leaving only Stockton, California, and Portland, Oregon, as west coast terminal stockyards.

Such action reflects the continuation of the trend toward direct marketing. In lieu of livestock terminal market reports at Los Angeles, which had been issued since 1922, reports were initiated for auction sales at Artesia and at the City of Industry. Also, a concerted effort was made to provide intensive coverage of direct sales from Southern California feedlots.

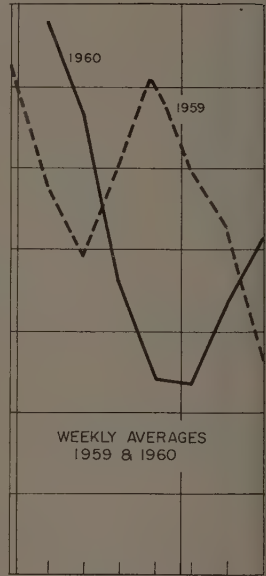
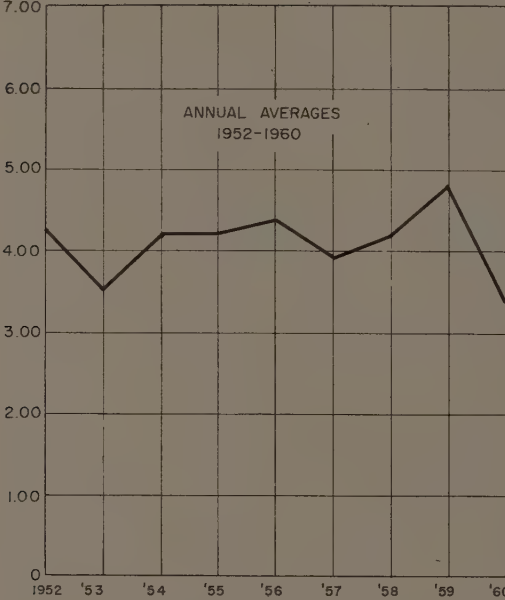
Realignment of the dairy and poultry program was necessitated by increased breadth of the production and marketing areas. Improved communication and transportation facilities, and enlargement in size of businesses have tended to eliminate differences between local districts. Reflecting these changes, chicken fryer reporting programs handled by the Fresno and San Francisco offices were consolidated. Effective April 1960, reporting of fryer marketings in Central and Northern California was combined into one report. In addition, minor modification of terminology used in the turkey reporting program was necessitated by recent buying practices.

Price reporting work performed by the Bureau is illustrated in six charts which show fluctuations in prices and trends for apricots, cherries, nectarines, peaches, pears, and plums the past nine years.

APRICOTS

PRICES FOR ALL VARIETIES AT EASTERN AUCTIONS

price
per lug
\$7.00



FEDERAL STATE MARKET NEWS SERVICE 1-15-61

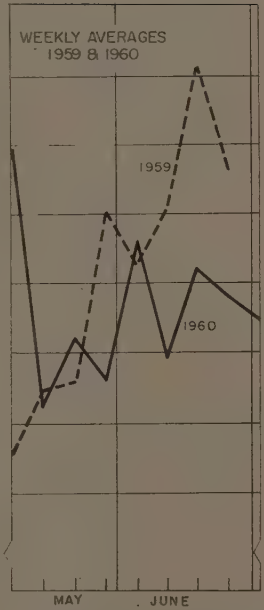
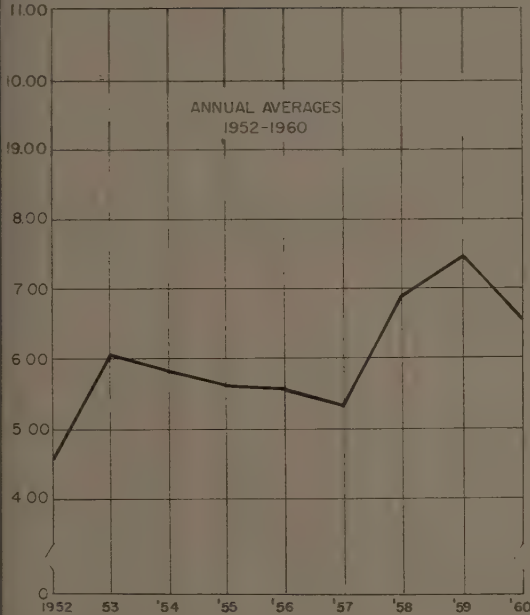
APRICOT PRICES AVERAGE SHARPLY BELOW 1959

The annual weighted average price for California apricots at eight eastern auctions in 1960 was \$3.37 per lug, sharply below the 1959 average of \$4.74, and the lowest since 1949. First arrivals of the 1960 crop at auction were during the week ending June 4, one week later than in 1959. Auction prices during the first week averaged \$6.74 per lug, 48 cents above the corresponding 1959 average of \$6.26 per lug. Price declines were constant until the week of July 2 when prices reached a seasonal low of \$2.32 per lug. The 1959 season's low of \$2.65 occurred during the week ending July 16. During the first half of June, 1960, abnormally high temperatures in most major California producing areas resulted in rapid maturity and a subsequent increase in fresh market movement. Movement to auctions during the period June 12-July 2 was more than twice that of a similar peak period in 1959. Total auction volume for the season was approximately 267,000 lugs, 62,300 lugs above 1959. New York handled approximately 141,300 lugs, or 53% of the total California volume. Philadelphia was the second largest handler with 39,700 lugs, or 15% of the total volume. Chicago ranked third in volume handled with 36,500 lugs, or 14% of the total, but had the highest annual average price of any of the auctions, at \$3.66 per lug.

CHERRIES

PRICES FOR ALL VARIETIES
AT EASTERN AUCTIONS

Price per
Campbell lug



FEDERAL STATE MARKET NEWS SERVICE 1-15-61

CHERRY PRICES AVERAGE BELOW PREVIOUS TWO YEARS

The annual weighted average price for California cherries at eight eastern auction markets during 1960 was \$6.52 per Campbell lug, 93 cents below the previous year's average of \$7.45, but higher than the eight-year 1952-1959 average of \$5.90. Prices for the first week of the season averaged \$9.04 per Campbell lug, extremely high compared with \$4.55 for the first week of the previous year. The following week was featured by a sharp drop in prices to a seasonal low of \$5.28. Weekly averages during the remainder of the season continued an irregular advance to higher levels. Volume during the early weeks of auction trading was relatively light. Peak seasonal movement occurred during the week ending June 11, one week later than in 1959. Total movement of California cherries at auction was approximately 325,000 Campbell lugs, 91,000 Calax lugs, and 529 cartons in 1960, compared with 313,000 Campbell lugs, 37,000 Calax lugs and 207 cartons in 1959. New York received approximately 188,600 Campbell lugs, or 58% of the total auction sales volume received in 1960. This was a 4% increase in volume over 1959. Chicago was second in auction sales volume, and handled approximately 50,000 Campbell lugs, or 15% of the total. This was 5% below the 1959 season. The Bing variety was predominant, and comprised 77% of the total volume in Campbell lugs sold at auction, while Tartarians comprised 21%, Chapmans 1% and other varieties 1% in 1960.

NECTARINES

PRICES FOR ALL VARIETIES
AT EASTERN AUCTIONS

price
per lug

\$6.00

5.00

4.00

3.00

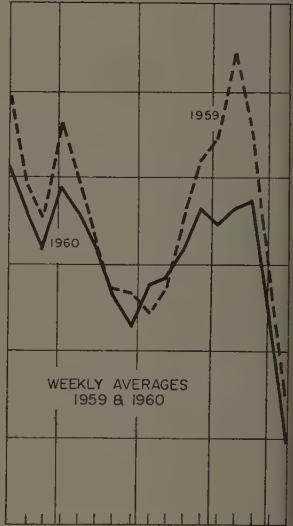
2.00

1.00

0

1952 '53 '54 '55 '56 '57 '58 '59 '60

ANNUAL AVERAGES
1952-1960



WEEKLY AVERAGES
1959 & 1960

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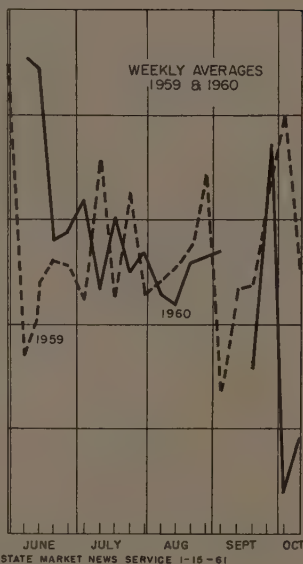
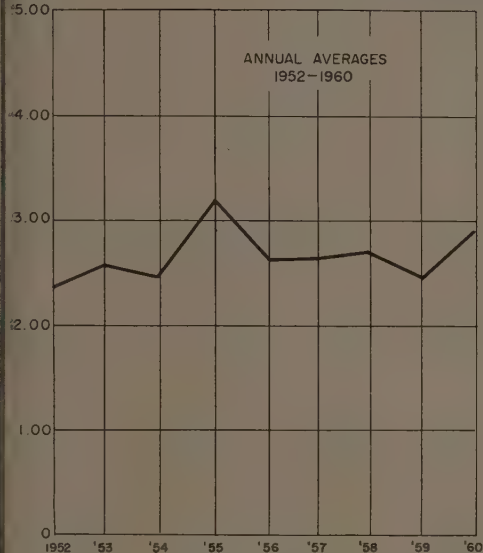
NECTARINE PRICES AVERAGE THE LOWEST SINCE 1949

The 1960 annual weighted average price for California nectarines at eight eastern auction markets was \$3.09 per lug, 27 cents below 1959 and the lowest since 1949. Average prices during 1960 were at or below 1959 levels for comparable dates much of the time. The average price during the week ending June 11, the first week of the season, was \$4.10 compared with the previous year's first weekly average of \$4.93 per lug. The lowest weekly average price during volume movement in 1960 was \$2.26 per lug for the week ending July 30, though prices averaged 97 cents per lug for a small volume at the end of the season. The low point during the 1960 season was one week earlier and slightly lower than the 1959 low of \$2.41 per lug. Total California nectarine supplies on the eight eastern auctions during 1960 were approximately 707,000 lugs, about 41,000 lugs below the previous season. Volume at auction early and late in the season exceeded that of 1959, and contributed in part to the lower annual average price.

PEACHES

PRICES FOR ALL VARIETIES
AT EASTERN AUCTIONS

Price
per lug
\$5.00



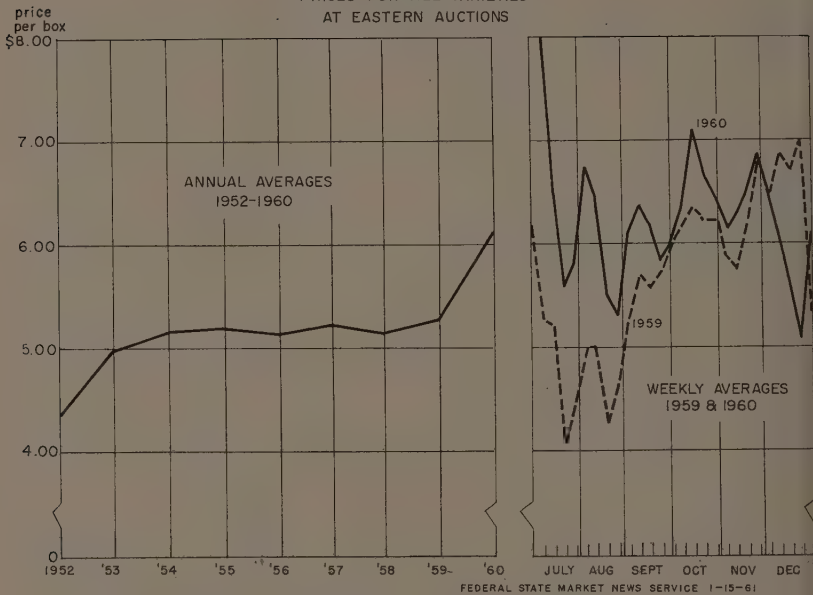
FEDERAL STATE MARKET NEWS SERVICE 1-15-61

PEACH PRICES AVERAGE HIGHEST SINCE 1955

The weighted average price for all varieties of California peaches at eight eastern auctions in 1960 is \$2.95 per lug, 51 cents above the 1959 average of \$2.44 and only 25 cents below the 1955 high of \$3.20. The first California supplies on these auctions appeared during the first week of June, one week later than in 1959. Total sales at auctions during 1960 were approximately 285,600 lugs, 110,000 boxes, and 71,600 flats. The volume in lugs was 34% above 1959, flats 4% above, and boxes 6% below 1959. Movement of California peaches at auction during the forepart of the marketing period, June through early July, was generally heavier than in the comparable period in 1959. This early supply situation, coupled with much lighter than usual market volume from the competitive southeastern states, contributed in part to the higher early season auction prices than in the previous season. Chicago received 166,000 lugs or 58% of the total auction sales volume received in lugs. New York was second, and received 83,145 lugs, or 29% of the total. Prices averaged \$2.79 per lug at Chicago and \$3.39 per lug at New York.

PEARS

PRICES FOR ALL VARIETIES AT EASTERN AUCTIONS

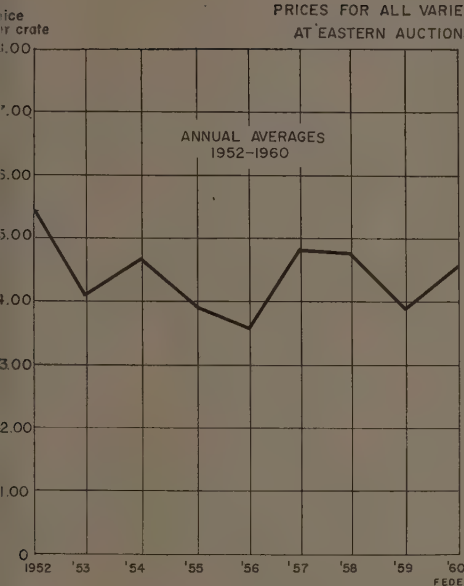


PEAR PRICES AVERAGE HIGHEST OF RECORD, REFLECTING LIGHT VOLUME

The weighted average price for all varieties of California pears at eight eastern auctions during 1960 was \$6.10 per box, 84 cents above the 1959 average of \$5.26, and was highest of record. Auction trading in 1960 started one week later than in 1959. Prices during the week ending July 9, the first week of auction trading, averaged \$7.98 per box, much higher than the first week's trading in 1959 which averaged \$6.18 per box. Prices the first week were the highest of the 1960 season, while in 1959 prices averaged the highest during the week ending December 24. The lowest average price during volume movement in 1960 was \$5.26 per box during the week of August 27 though prices averaged \$5.08 per box on a smaller volume near the close of the season. The 1959 low was \$4.09 during the week ending July 25. Total movement of California pears through auctions during the calendar year was approximately 897,000 boxes, about 24% below the 1,181,000 boxes moved during 1959. Additionally, small quantities moved in half boxes, lugs, and cartons. Except for October and December, movement during 1960 was below 1959 for corresponding months. Supplies were relatively heavy at auctions during the week ending August 20 and October 1 when approximately 73,700 boxes per week were sold. New York received 448,700 boxes or half the total amount received at auctions in boxes. The average price at New York for the season was \$6.19 per box, the highest of the eight auctions. The Bartlett was the principal variety sold at auction, and comprised 85% of the total volume sold in lugs.

PLUMS

PRICES FOR ALL VARIETIES
AT EASTERN AUCTIONS



PLUM PRICES AVERAGE ABOVE 1959 SEASON

1960 the annual weighted average price for California plums at eight eastern auctions was \$4.58 per crate, 71 cents above the 1959 average of \$3.87 and slightly above the eight year 1952-1959 average of \$4.38 per crate. The 1960 auction season for plums began during the last week of May, same as in 1959. The first weekly average price reported was \$7.31 per crate, nearly \$1.00 above \$6.32 average for the comparable week in 1959 and the highest of the season. The lowest weekly average price during volume movement was \$3.14 per crate for the week ending July 30, though prices averaged \$2.76 per crate on a small volume at the close of the season. The mid-season low point was one week earlier and slightly lower than that in 1959. The total supply of plums sold at auction was approximately 1,605,000 crates, 16% below the 1,901,000 crates in 1959. Additionally, smaller quantities sold in lugs, boxes, cartons and flats. The weekly volume sold at auctions only exceeded that of the previous year during the final weeks of the season. During 1960, 47 varieties sold at auction, with the Santa Rosa predominating and Duarte variety second. The New York auction handled 840,000 crates or 52% of the total sold at auction in crates. The season average price of \$4.73 per crate at New York was the highest of the eight auctions.

Bureau of Markets

WARD B. STUDT, *Chief*

HARRY J. KRADE, *Assistant Chief*

The Bureau of Markets, California Department of Agriculture, performs four functions.

The one of the widest scope is the administration of the state laws which authorize agricultural industries of California to adopt state-assisted programs to regulate the marketing of their products—self-help marketing programs.

Second, the Bureau makes research studies and surveys of marketing problems of agricultural industries. These studies are made under joint Federal-State auspices, usually at the request of an industry which is carrying out a marketing program under one of the State marketing laws.

Third, the Bureau advises and aids industry groups in the formation or operation of agricultural cooperative associations.

Fourth, the Bureau of Markets supplies information and suggestions to agricultural industry groups, government officials, and the general public on questions and matters related to the marketing of California agricultural commodities or related to economic questions about California agriculture.

Some of these activities were begun by the State government before the State Department of Agriculture was established in 1919. Not until 1921 were these agricultural marketing program responsibilities consolidated in the Department in a Division of Markets. Since that time there has been a steady increase in the extent to which California agriculture has utilized this State service. Present indications are that the use of this service will continue to increase.

Three active marketing laws were administered by the Bureau of Markets in 1960. These are: *The Agricultural Producers Marketing Law*, which had its beginning in 1933; *the California Marketing Act of 1937*; and *the California Beef Council Law*, enacted in 1957.

These laws are very similar in their essential features. They authorize an agricultural industry of the State to formulate and adopt a program to regulate the marketing of its product, and to obtain the help of State authority in the administration of the program.

The kinds of regulations which may be employed and the manner in which they may be used have been very explicitly set forth by the Legislature. The laws lay down specific standards which must be observed in putting any such program into effect, and which govern the subsequent administration of the program.

Each program provides for an advisory board composed of members of the industry. The boards recommend to the Director of Agriculture specific actions to be taken to carry out the provisions of the programs. Each board employs a manager and other personnel needed for administration of its program. Employees are noncivil service.

Agricultural Producers Marketing Law

Programs made effective under the Agricultural Producers Marketing Law may apply only to the producers of a commodity.

These programs cannot directly regulate the processors or distributors of the commodity.

Programs operating under the authority of this law have made notable contributions over the years to improvements in the marketing of California agricultural commodities. In recent years, however, most industries have desired to include both producers and handlers in the program and, therefore, have turned to the California Marketing Act of 1937.

In 1960 there were two programs in effect and in active operation under the authority of the Agricultural Producers Marketing Law. These programs and the actions they authorize are:

1. Marketing Program for Canning Bartlett Pears, which has been in effect continuously since 1938—Grade and size regulations; advertising and sales promotion; research.
2. Marketing Program for Brussel Sprouts for Freezing, made effective in 1958—Quantity limitations for freezing only.

California Marketing Act of 1937

Experience under the Agricultural Producers Marketing Law showed a need for a law with broader application to marketing problems and which would enable all elements of an industry to take part. In recog-

tion of this need the Legislature enacted the California Marketing Act of 1937.

This Act authorizes either the producers of a commodity or the handlers of a commodity, or both the producers and handlers jointly, to formulate and be parties to a program to regulate the marketing of the commodity.

Under this Act three new programs were put into effect in 1960, bringing to 34 the programs in effect in 1960, one of which is terminated at the end of the year.

These programs, the years in which they became effective, and their principal provisions are:

Marketing Order for Early Apples Produced in California, 1948—Grade, size, volume, pack and container, and quantity regulations; advertising and sales promotion; research.

Marketing Order for the Promotion of Globe Artichokes, 1960—Sales promotion; advertising; and research.

Marketing Order for Fresh Asparagus, 1954—Grade and size regulations; quantity regulations; advertising and sales promotion; research.

Marketing Order for Processing Asparagus, 1954—Quantity regulations; advertising and sales promotion; research.

Marketing Order for California Bush Berries for Processing, 1954—Advertising and sales promotion; research.

Marketing Order for California Cantaloupes, 1955—Grade, size, pack and container regulations; surplus control; advertising and sales promotion; research.

Marketing Order for Coachella Valley Green Corn (Order inactive), 1947—Grade and quantity regulations.

Marketing Order for Dried Figs, 1944—Diversion of substandard figs; advertising and sales promotion; research.

Marketing Order for California Desert Grapefruit, 1941—Grade and size regulations; advertising and sales promotion; research.

Marketing Order for Extracted Honey, 1952—Advertising and sales promotion; research.

Marketing Order for Dry-Pack Lettuce, 1942—Grade and size regulations; quantity regulations. Marketing Order for Summer Head Lettuce, 1959—Grade and size regulations; quantity regulations; unfair trade practices.

Marketing Order for Winter Head Lettuce, 1959—Grade and size regulations; quantity regulations; research.

Marketing Order for Standard Lima Beans, 1951—Advertising and sales promotion; research.

Marketing Order for California Olallie Berries for Processing, 1958—Advertising and sales promotion; research.

Marketing Order for California Canned Olives, 1957—Quality and size regulations; market stabilization; surplus control; advertising and sales promotion; research.

Marketing Order for Canning and Freezing Cling Peaches, 1936—Surplus control; quantity regulations; advertising and sales promotion; research.

Marketing Order for California Fresh Peaches, 1950—Grade, size, maturity, and pack regulations; advertising and sales promotion; research.

Marketing Order for Fresh Bartlett Pears, 1937—Grade and size regulations.

Marketing Order for Sales Promotion of Fresh Bartlett Pears, 1950—Advertising and sales promotion; research.

Marketing Order for Canning Fall and Winter Pears, 1941—Grade regulations.

Marketing Order for Fresh Fall and Winter Pears Grown in the State of California, 1941—Grade and size regulations; volume regulations; advertising and sales promotion.

Marketing Order for the Promotion of Hardy Pears for Canning, 1955—Advertising and sales promotion; research.

Marketing Order for California Fresh Plums, 1950—Grade, size, maturity, and pack regulations; advertising and sales promotion; research.

Marketing Order for Delta White Potatoes (Order inactive), 1953—Grade, size, maturity regulations; advertising and sales promotion; research.

Marketing Order for Long White Potatoes (terminated in 1960), 1953—Grade, size, maturity regulations; advertising and sales promotion; research.

Marketing Agreement for Poultry and Turkey Improvement in California, 1945—Pullorum and fowl typhoid disease control.

Marketing Order for California Dried Prunes, 1947—Advertising and sales promotion; research.

Marketing Order for California Raisins, 1949—Advertising and sales promotion; research.

Marketing Order for California Strawberries, 1955—Advertising and sales promotion; research.

Marketing Order for Processing Strawberries, 1960—Grade standards and certification.

Marketing Order for Fresh Green Tomatoes, 1960—Pack regulations; uniform trade practices and research.

Marketing Order for the Promotion of California Turkeys, 1952—Advertising and sales promotion.

Marketing Order for Wine, 1938—Advertising and sales promotion; research.

The California Beef Council Law

The California Beef Council Law, as enacted in 1957 and amended in 1959, enables beef producers of the State to pool and apply resources and efforts toward increasing the consumption of beef and beef products.

The Beef Council, consisting of 19 members and their alternates representing rancher, feeder, and dairy divisions of the California beef industry, assists the State Director of Agriculture in the administration of the Law.

To increase the consumption of beef and beef products, the Council in 1960, as in prior years, concentrated mainly upon consumer promotion and education activities, designed to stimulate the purchase and use of the lower-priced, more plentiful meat cuts and products.

Moneys with which to finance Council activities are collected through a fee of 10 cents per head on cattle and calves which is levied at the time of sale.

Fish and Seafood

The handlers of fish and seafood failed to give assent to the proposed promotion program authorized by the California Fish and Seafood Advisory Board Law, which was enacted in July, 1959. At the close of the assent period only 48 percent of the handlers, with only 45 percent of the volume, had given their assent. Consequently, the program was not made effective.

Enforcement

During 1960, the Enforcement Section of the Bureau made collections of \$390,195 of which \$28,386 was collected by settlement of 18 complaints filed by the Attorney General.

The programs for which substantial amounts were collected were: raisins, \$156,394; turkey promotion, \$61,554; cling peaches, \$49,870; and prunes, \$17,313.

There were some special problems in 1960 encountered in the enforcement of some of the marketing programs.

The Marketing Order for the Promotion of California Avocados was issued to become effective February 29, 1960. The Marketing Order had already been challenged on the grounds that the list of producers used by the Director was incomplete. Opponents of the Order requested and obtained a restraining order against the Director from the Superior Court of San Diego County which was followed by an injunction against the Director restraining him from enforcing the Marketing Order. The ruling of the Court is being appealed but, in the meantime, the Marketing Order is inoperative.

Volume control regulations for summer head lettuce have required considerable investigation work to ascertain compliance with daily and weekly packing quotas. Only one complaint, however, was filed during the season, settlement of which was still pending at the close of the year.

Discing provisions were also invoked as a means of controlling supply, and county inspectors assisted in reporting the extent of compliance with these provisions. No violations were reported which required filing complaints.

The inspection of cantaloupes for market was performed in 1960 by the Bureau of Shipping Point Inspection. The red-tag procedure for dealing with violations was restricted to those instances where there was willful noncompliance. No such cases were reported to the Bureau of Market Enforce-

ment, nor were there any of the usual type of violations regarding uncrated cantaloupes being sold from trucks or roadside stands.

In the case of the Fresh Peach and Fresh Plum Marketing Orders, there was a significant reduction in number of noncompliance reports and general enforcement expenses were curtailed noticeably.

In contrast with prior years, when there have been a few processors who failed to meet their requirement to divert off-grade cling peaches, there was full compliance with these regulations.

Forms used by the Bureau of Markets in issuing notices of noncompliance were revised in 1960, pursuant to suggestions of County Agricultural Commissioners and their inspectors.

On December 15, 1960, a reorganization of the Department transferred the enforcement section of the Bureau of Markets to the Bureau of Market Enforcement.

Auditing

The Bureau makes administrative audits of the records of handlers of the commodities regulated by marketing programs to determine the status of collection of assessments. The Bureau audits the records of all such handlers following the first year of operation of a marketing program. The extent of subsequent audits is determined from experience gained relative to the general accuracy of, and compliance with, assessment payments. Usually, audits are made each year of not less than 15 percent of the industry by number and volume.

Investigative audits are made in all cases where there is reason to believe that underpayments may have occurred. Reorganization of the Department provides for transferring these audit functions to the Bureau of Market Enforcement. The Bureau of Markets audits and reviews the activities conducted by the program advisory boards in handling administrative obligations.

Marketing Surveys

One of the services furnished to California agricultural industries by the Bureau of Markets is making surveys of marketing problems to discover ways to improve marketing. Surveys requested by industries are made when funds and qualified personnel are available, taking into account the urgency and priority of the request. These surveys are financed by the U. S. Department of Agriculture, and by the California

Bureau of Markets, California Department of Agriculture

Summary of Marketing Programs—1960

Approximate Expenditures, Fiscal Year 1959-1960

Commodity	Number Directly Affected		Approximate Expenditures, Fiscal Year 1959-1960				Total
	Producers	Handlers	Administration	Inspection	Promotion	Research	
Early apples	1,145	200	\$8,889	\$6,405	---	---	\$15,294 *
Globe artichokes	104	---	---	---	---	---	---
Fresh asparagus	78	199	11,017	---	\$17,013	\$16,138	44,168
Processing asparagus	277	30	29,086	---	45,013	24,338	98,437
Standard lima beans	616	24	13,459	---	---	23,185	36,644
Beef	33,500	---	46,355	---	111,930	4,026	162,311
Brussels sprouts	68	21	9,962	---	19,832	---	29,794
Bush berries	220	34	8,666	---	16,441	136	25,243
Olallie berries	125	21	4,507	---	398	---	4,905
Cantaloupes	220	101	46,691	18,566	96,460	---	161,717
Dried figs	273	10	45,227	11,964	1,871	622	47,720
Desert grapefruit	227	40	13,721	---	---	---	25,685
Extracted honey	460	69	13,573	18,527	18,358	1,420	33,351
Dry-pack lettuce	112	35	9,453	---	---	---	27,980
Summer head lettuce	554	196	95,152	10,286	---	---	105,438
Winter head lettuce	127	85	39,803	2,215	---	---	42,018
Canned olives	2,489	33	56,217	---	175,281	40,858	272,356
Cling peaches	3,565	37	697,089	298,100	1,810,658	21,000	2,826,847
Fresh peaches	1,765	524	40,091	27,537	30,981	1,250	99,859
Canning Bartlett pears	2,261	26	50,179	174,185	215,765	26,142	466,271
Fresh fall and winter pears	340	92	3,278	1,113	28,694	---	33,085
Canning fall and winter pears	719	19	10,146	13,017	15,000	---	23,163
Canning hardy pears	418	17	3,139	---	---	---	18,139
Fresh Bartlett pears	1,260	252	16,424	15,102	---	---	31,526
Fresh Bartlett pears promotion	1,519	252	18,432	---	201,821	---	220,253
Fresh plums	1,815	426	19,575	10,128	8,795	---	38,498
Delta white potatoes	17	12	3,807	---	---	---	3,807
Long white potatoes	870	201	34,371	---	1,677	4,120	40,168
Poultry improvement	433	---	60,018	104,218	---	---	164,236
Dried prunes	5,313	24	40,926	---	432,959	9,151	483,036
Raisins	4,571	21	36,614	---	663,648	35,958	736,260
Strawberry promotion	982	46	41,721	---	44,626	9,000	95,347 *
Processing strawberries	---	28	---	---	---	---	---
Fresh green tomatoes	---	31	---	---	---	---	---
Turkey promotion	812	196	32,821	---	212,482	---	245,303
Wine	---	235	86,966	---	2,061,194	210,523	2,358,683
Totals	67,255	3,537	\$1,647,375	\$711,363	\$6,230,897	\$427,907	\$9,017,542

* Not in effect in fiscal year 1959-60.

Department of Agriculture on a matched-fund basis. These funds pay for the costs of a survey and the printing of a survey report. The cost of mailing the report to members of the industry is assumed by the industry which requested the survey.

These surveys have the purpose of improving the utilization, marketability, and distribution of fresh and processed fruits and vegetables, dairy and poultry products, and other agricultural products.

Different approaches to market improvement with which a typical survey would deal are: increasing the salability of a commodity by improving its quality; having more kinds of products available, with better packaging and labeling; eliminating faulty practices of distributors and commercial users; and increasing the effectiveness of promotional programs.

In conducting a survey it is necessary:

First, to analyze the marketing problems of the industry, drawing upon the analytical work of persons both inside and outside the industry.

Second, the available information bearing on the problems is brought together. This requires assistance from governmental agencies, both State and Federal, and from private agencies.

Third, such additional information as is required is obtained through first-hand observations of marketing practices and conditions, and through personal interview with distributors, commercial users, and consumers.

Fourth, recommendations for industry action are developed in terms of the lines of action open to the industry.

Fifth, such findings and recommendations as bear on the immediate problems are presented to the industry. A comprehensive report of the findings and recommendations is distributed to members of the industry and other interested persons.

A complete survey usually requires a year, but preliminary results are available to the industry as the survey progresses.

Since mid-1949, when the Bureau began furnishing this service, 15 industries have availed themselves of it. Two of these have requested follow-up surveys.

In 1960, a survey dealing specifically with promotion was completed, and a report for use by industries concerned with promotional programs was published. Also, progress was made on the follow-up survey for the turkey industry.

Agricultural Cooperative Associations

In 1960, as for several years, the Bureau received few requests for service to existing cooperative associations or to groups seeking to organize a new association. This is not surprising in view of the important position cooperative associations have long held in the marketing of the agricultural commodities of California, and the many years of successful operation of many of these associations.

California may not be the place where farmer cooperation originated but the State is without question outstanding in the number, diversity, and success of farm cooperatives. California farm cooperatives are of three general types: those which bargain for the sale of their members' products but do not engage in the physical handling of such products; those which perform on behalf of their members such functions as the grading, packing, shipping, processing, and distribution of a commodity; and those which purchase for their members such production items as fertilizers, spray materials, livestock feeds, or machinery and equipment.

General Marketing Service

Almost every day the Bureau receives requests from farm organizations, groups, or individuals for information or suggestions on marketing problems. Some of these requests are met by telephone conversation or correspondence. Many requests, however, require that a member of the staff of the Bureau meet once or several times with the group which has asked for help or advice, or address a public meeting or convention.

In many cases the organization or industry asks for help in exploring the possibility of having an effective marketing program under one of California's marketing laws. When such requests are made, an economist of the Bureau meets with the group or a committee of its choosing to analyze the marketing problems which confront the industry, and to determine whether these problems might be solved or alleviated by means of a program authorized by the marketing laws administered by the Bureau.

If it is decided that such a program likely would be effective, the Bureau and the industry group collaborate in the drafting of the provisions of such a program. Thereafter, it is the responsibility of the industry group to sponsor and finance the proceedings necessary to put the program into effect.

The Bureau of Markets also has the assignment of furnishing for officials of the department and other State agencies information about the marketing of California agricultural commodities, reports on the significance to California of developments in other states or in foreign areas, and analyses of Federal actions or proposals. Whenever requested, suggestions are supplied for De-

partment officials to use in correspondence, public addresses, and reports, or in testimony before State or Federal legislative committees or regulatory agencies.

The tabulation shows for each program in effect in 1960, the number of producers and handlers directly affected and the amount of funds expended for each purpose:

Bureau of Milk Stabilization

A. WEINLAND, *Chief*

C. SCHAFFER, *Assistant Chief*

The Bureau of Milk Stabilization administers and enforces the provisions of Chapter 15 of Division 4 and Chapters 15, 16 and 17 of the Agricultural Code of California.

Division 6 of the Agricultural Code of California. Together, these sections constitute the milk stabilization and marketing program.

Chapter 17, the Milk Stabilization Law, provides for the establishment of minimum producer prices and minimum wholesale and minimum retail prices for fluid milk. It also provides for the licensing and bonding of distributors, and for the organization and financing of sales stimulation programs by marketing areas.

Chapter 16 regulates certain business activities of dairy product distributors. The statute defines and prohibits certain unfair business practices, and provides for the establishment of rules and regulations. It further requires the establishment of minimum rental rates for refrigeration equipment for frozen products supplied by a distributor to a customer.

Chapter 15 provides for the licensing and regulation of dairy produce exchanges.

Chapter 14, the California Dairy Industry Advisory Board Act, enables the dairy industry to develop, maintain, and expand its markets through sales stimulation, research, and educational programs. This program is financed entirely by the State's dairy industry.

Because of the increased size and scope of the dairy industry in California, and in order to improve its service to the dairy industry, the Bureau underwent a change in its organization during 1960. The staff of the Bureau was increased by 17 new positions. The new positions consisted of an enforce-

ment coordinator, an area supervisor, 5 producer payment auditors, 7 senior investigators, 1 senior milk economist, and 2 stenographers.

The position of enforcement coordinator was added to coordinate the enforcement activities of the Bureau throughout the State in order to provide effective and uniform enforcement of the marketing regulations. This officer also has the responsibility of establishing and maintaining a manual of enforcement procedure, a manual of producer payment auditing procedure, and maintaining effective liaison among Bureau enforcement officers and with the Office of the Attorney General.

An area supervisor was added, bringing the total to three. The milk marketing programs have been administered from two regional offices, one in Los Angeles and one in San Francisco. Under the reorganization, the Bureau has three administrative regions, in Los Angeles for Southern California, in Sacramento for Central California, and in San Francisco for the North Coastal region.

Five producer payment auditors were added in response to an increased workload resulting from greater complexity of producer pricing. Presently, separate prices are established for three classifications of milk usages on a milk fat and solids-nonfat basis. Formerly, minimum producer prices had been established for two classifications on a hundredweight basis.

Seven senior investigators were added to the staff in response to the increases in population, milk production, milk sales, and complexity of the milk marketing regulations.

The two stenographers were added to handle the additional clerical needs flowing from increases in staff and workload.

TABLE 1

Estimated Sales per Capita of Fluid Milk in California, 1958-1960

Year	Estimated population July 1 (thousands)	Total sales of fluid milk		Sales per capita (quarts)
		Thousand gallons	Thousand quarts	
1958	14,752	485,273	1,941,092	131.6
1959	15,280	496,516	1,986,064	130.0
1960	15,860	498,328	1,993,312	125.7

TABLE 2

Sales of Class 1 Fluid Market Milk Products, Other Than Fluid Milk In California, 1958-1960

Year	Fluid skim milk	Flavored milk drink	Half-and-half	Fluid cream	
				Sour	Other
1958	25,115	8,045	15,677	1,549	1,971
1959	28,635	8,600	15,620	1,849	1,895
1960	30,869	8,488	15,417	2,108	1,859

The reorganization of the Bureau, which represents the first major change in the organization since 1956, is continuing in 1961.

The reorganization plan calls for dividing the Bureau into two programs—pricing and enforcement. Each program is to be headed by an officer at the Bureau Chief level who will report to the Division Chief of the newly-created Division of Dairy Industry.

Milk Production

Between 1959 and 1960, the commercial production of all milk in California increased about 1.9 percent.

Milk received at plants as market milk decreased 0.2 percent but that which was received at plants as manufacturing milk increased 11.1 percent. A significant part of the manufacturing milk represented milk produced as market milk but which was classified as manufacturing milk because it went directly from the ranches of producers to manufacturing plants.

Class 1 usage of market milk, which consists of market milk supplied to consumers as fluid milk, fluid skim milk and fluid cream in 1960 in California was only 0.7 percent greater than it was in 1959.

The supply of milk available for manufacture was up 3.7 percent. In 1959, this milk available for use in manufactured dairy products represented about 38 percent of the total milk produced commercially in the State; in 1960, it represented 39 percent.

Sales of fluid milk in California during 1960 totaled about 498,328,000 gallons, an increase of 0.4 percent over the comparable figure for 1959. However, with an estimated 3.8 percent increase in the population of the State between 1959 and 1960, per capita sales of fluid milk declined 3.3 percent. In 1959,

these sales amounted to 130 quarts per person in the resident population; in 1960, to 125.7 quarts.

Between 1959 and 1960, sales of fluid skim milk in California increased 7.8 percent. Sales of flavored milk drink and sales of half and half declined 1.3 percent. Sales of fluid cream rose 5.9 percent, with an increase of 14 percent in the sales of sour cream more than offsetting a decline of 1.9 percent in the sales of other fluid cream.

As of December 31, 1960, 1,848 fluid milk distributors were licensed to do business as distributors in California.

As of the same date in 1959, there were 1,781 licensed fluid milk distributors.

Of 1,848 distributors in 1960, 361 were bonded distributors purchasing fluid milk from producers; 42 were bonded distributors purchasing processed fluid milk from producers; 70 were distributors purchasing milk from producers and paying cash upon receipt of the milk; 203 were producer-distributors, and 1,214 were subdistributors purchasing their supplies from other distributors.

Of the subdistributors, 39 processed the fluid milk purchased from other distributors.

Public Hearings

A total of 27 public hearings were held during 1960 by the Bureau of Milk Stabilization. Sixteen of the hearings were for the purpose of considering amendments to the minimum wholesale and minimum retail prices for fluid milk, two for the purpose of considering wholesale discounts on sales of fluid milk to schools.

Six hearings were held for the purpose of considering proposed amendments to the

minimum prices distributors are required to pay to producers for fluid milk used for manufacturing purposes, and to consider proposed amendments with respect to maximum transportation charges which may be assessed against producers.

One hearing was held to consider the proposed modification of a marketing area, two for the purpose of considering the creation of resale zones within marketing areas, and one for the purpose of considering proposed consolidation of marketing areas.

As a result of the resale hearings, minimum milk prices were increased at the consumer level in sixteen marketing areas to compensate for increased costs of labor and supplies. The number of marketing areas was reduced from 28 to 27, as a result of the hearings for consolidation of areas. Despite the many increases in minimum prices set by the State, consumers purchasing milk in California remain in a favorable position when compared to the United States as a whole. Table 3 shows a comparison of retail prices between California cities and cities throughout the United States.

TABLE 3
Average Retail Prices of Fluid Milk Sold at Grocery Stores and Delivered to Homes
19 Cities, United States, May and October, 1960

	(Cents per quart)	
	Grocery stores	Home-delivered
Baltimore, Md. _____	28.35	27.30
Atlanta, Ga. _____	28.10	27.20
Philadelphia, Pa. _____	28.00	28.50
Pittsburgh, Pa. _____	27.65	28.25
New York, N.Y. _____	27.55	31.45
Washington, D.C. _____	27.05	28.05
Scranton, Pa. _____	26.70	27.50
Cincinnati, Ohio _____	24.70	25.00
Houston, Texas _____	24.45	27.25
Chicago, Ill. _____	24.15	28.10
SAN FRANCISCO, CALIF. _____	24.00	25.55
Seattle, Wash. _____	23.90	24.50
Portland, Ore. _____	23.80	26.00
Detroit, Mich. _____	23.40	—
LOS ANGELES, CALIF. _____	22.80	24.65
Boston, Mass. _____	21.95	27.05
Cleveland, Ohio _____	20.05	22.95
St. Louis, Mo. _____	18.70	22.50
Minneapolis, Minn. _____	18.30	19.65
19-city average _____	24.40	26.19
United States, 45-city average _____	24.45	25.95

Source of data:

United States Department of Labor, Bureau of Labor Statistics, Retail Food Prices by Cities.

TABLE 4
Minimum Fluid Milk Prices Effective in 27 Marketing Areas in California, December 31, 1960

Marketing area	Pounds of milk fat	Producer price f.o.b. plant (dollars)		Retail store price quart
		100 pounds of skim	100 pounds 3.8% milk	
San Joaquin Hills-Contra Costa _____	1.03	2.09	5.92	25
San Joaquin Hills-Glenn _____	1.02	1.95	5.75	24.5
San Joaquin Hills-Tuolumne _____	1.02	2.11	5.91	26
San Joaquin Hills-Norte-Humboldt _____	1.01	1.92	5.69	25
San Joaquin Hills-Sono _____	1.02	1.79	5.60	24
San Joaquin Hills-Special _____	1.02	1.70	5.51	24.5
San Joaquin Hills-Mono _____	0.99	2.53	6.20	25.5
San Joaquin Hills-Tin _____	1.02	1.71	5.52	23.5
San Joaquin Hills-Sage-Tulare _____	1.02	1.71	5.52	23.5
San Joaquin Hills-Angeles _____	1.04	1.83	5.71	23
San Joaquin Hills-San Joaquin-Merced _____	1.02	1.76	5.57	24
San Joaquin Hills-Trin _____	1.03	1.95	5.79	24
San Joaquin Hills-San Joaquin-Santa Cruz _____	1.03	1.96	5.80	23
San Joaquin Hills-Northern Sierra _____	1.03	2.14	5.97	26
San Joaquin Hills-Bowditch, Zone 1 _____	1.03	1.99	5.83	24
San Joaquin Hills-Bowditch, Zone 2 _____	1.03	1.99	5.83	25.5
San Joaquin Hills-Frammento, Zone 1 _____	1.02	1.95	5.75	23.5
San Joaquin Hills-Frammento, Zone 2 _____	1.02	1.95	5.75	24
San Joaquin Hills-Frammento, Zone 3 _____	1.02	1.95	5.75	25.5
San Joaquin Hills-Bernardino-Riverside, Zone 1 _____	1.04	1.83	5.71	23.5
San Joaquin Hills-Bernardino-Riverside, Zone 2 _____	1.04	1.83	5.71	24
San Joaquin Hills-San Diego _____	1.04	1.93	5.81	24
San Joaquin Hills-San Francisco _____	1.03	2.09	5.92	25
San Joaquin Hills-San Joaquin _____	1.02	1.95	5.75	24.5
San Joaquin Hills-San Luis Obispo _____	1.04	1.96	5.84	23.5
San Joaquin Hills-Santa Clara _____	1.03	2.06	5.90	24.5
San Joaquin Hills-Santa-Tehama, Zone 1 _____	1.02	2.04	5.84	24.5
San Joaquin Hills-Santa-Tehama, Zone 2 _____	1.02	2.04	5.84	25.5
San Joaquin Hills-Skiyou _____	1.02	2.01	5.81	26
San Joaquin Hills-Sano _____	1.03	1.97	5.81	24
San Joaquin Hills-Sanislus _____	1.02	1.95	5.75	23
San Joaquin Hills-Santura-Santa Barbara _____	1.04	1.83	5.71	23.5

TABLE 5
Commercial Production and Usage of
Market Milk in California,
1950-1960
(million pounds)

	Commercial production	Class 1 usage	"Other than Class 1" usage
1950.....	3,706	3,125	581
1951.....	3,892	3,338	554
1952.....	4,031	3,553	478
1953.....	4,396	3,680	716
1954.....	4,580	3,768	812
1955.....	4,801	4,029	772
1956.....	5,153	4,354	799
1957.....	5,689	4,550	1,139
1958.....	5,831	4,624	1,207
1959.....	6,276	4,757	1,519
1960.....	6,288	4,790	1,498

In 1960, the Director of Agriculture appointed milk study committees, representing the various segments of the dairy industry, to assist the Department in a study of the problems confronting the dairy industry in the State, to develop specific recommendations to improve conditions in the production and marketing of milk and dairy products, and to determine whether changes in procedure which may be accomplished under the framework and authority of the present statute might also improve production and marketing conditions. At the close of the year 1960, these committees continued to function and a number of worthwhile recommendations had been made in the form of general principles. More are expected as the committees continue work.

I. GENERAL PRINCIPLES ADOPTED BY THE COMMITTEES:

1. For regular fluid milk requirements, the contract should provide only for Class 1 needs, plus a reasonable standby quantity. By mutual consent of both parties, or by contract provision, the producer may produce and deliver, and the distributor may receive over-contract milk, provided that such over-contract production should not be required as a condition for maintaining the Grade A contract amount.
2. Provisions of fluid milk purchase contracts, insofar as possible, should result in a sound blend price to reasonably efficient producers.
3. Fluid milk purchase agreements should provide for equitable and equal treatment of all producers delivering to each

plant, it being recognized that there may be long-standing contracts or other exceptions based upon reasonable business arrangements.

4. Provisions of milk purchase agreements should not result in inequities among distributors, or between private distributors and cooperative associations.
5. In the development of general principles applicable to milk purchase contracts, it is necessary to distinguish between principles applicable to city milk processing and distributing plants and country milk plants, as such plants are defined in stabilization and marketing plans.

II. CONTRACT PRINCIPLES APPLICABLE TO CITY PLANTS:

1. Contract Amount:

- (a) With the exception of situations which are to the mutual interest of the producer and distributor, milk should be purchased on a regular daily basis.
- (b) The contract amount should be expressed in pounds or gallons of whole milk.

2. Class 1 Guarantee:

- (a) There should be a separate guarantee for both fat and skim milk.
- (b) The Class 1 guarantee should bear a conservative and reasonable relationship to the distributor's regular anticipated Class 1 usage.

3. Changes in Contract Amounts and Class 1 Guarantees:

Contracts with 100 percent Class 1 guarantees should not be used. The total amount of fluid milk contracted for by a distributor should not result in continuous Class 1 usage from over-contract milk.

4. Grade A Milk in Excess of Contract:

The producer is entitled to know how much over-contract milk the distributor will obligate himself to receive. Additional amounts may be received by mutual agreement.

5. Method of Determining Payment:

The three-pool method of producer payment should be used throughout California.

16. *Hauling Rates:*

The producer is entitled to a statement of applicable hauling rates on the monthly statement. Reasonable notice of rate adjustments should be given.

17. *Contract Amendment:*

Contracts should be made for a one-year term or longer, or on a continuing basis, with at least thirty days' notice to amend those provisions not covered automatically, and with ninety days notice for permanent termination; provided that the contract may provide for automatic adjustment of contract amount and guarantee amount in case of emergencies or unusual sales fluctuations.

18. *Uniform Provisions:*

Consistent with the exceptions agreed to heretofore in the general principles, all contract provisions should be uniform to all producers shipping to a plant.

19. *Quality:*

The contract should clearly specify the quality standards. Failure to meet said standards shall be cause for cancellation, pursuant to procedures specified in said contract.

The adoption of these principles will be on a voluntary basis since it was generally agreed that legislation should not be used to correct problems which the industry believed could be accomplished through adherence to these principles.

As other industry problems arise, these committees will be on call to meet and discuss these matters thoroughly and promptly.

Cost Surveys

During 1960, the Bureau conducted 2,587 production cost surveys on 562 individual dairy farms cooperating on the survey. An average of 4.6 surveys were made on each dairy during the year. Approximately 87 percent of the total surveys made were from records of market grade milk production figures.

As a result of producer payment audits of payments by distributors to producers of fluid milk, recoveries of \$219,066.86 were made for 924 producers.

During 1960, the Bureau completed 60 cost studies for the processing and distribut-

ing of fluid milk, 16 studies were completed to determine the cost for processing and selling milk at the processing plant, and 4 studies were completed to determine the cost for processing and selling milk at the ranch where the milk was produced.

In addition, 36 cost studies were adjusted to reflect labor increases, and other increased costs.

A study was made to determine the necessary investment per gallon for processing and distributing fluid milk in California. This study involved the analysis of 15 plants of various sizes and locations within the State.

The bureau filed 20 court actions during 1960, and five cases were closed. Collections of civil penalties amounted to \$6,750.

The United States District Court for the Northern District of California, Southern Division, in a Memorandum Opinion, dated November 29, 1960, made a ruling that had an important impact on the California dairy industry. This opinion had the effect of setting aside the application of California milk marketing and stabilization programs to sale of milk to agencies of the federal government. Following this opinion, the prices that dairy farmers received for the portion of their milk sold to the federal government dropped to the manufacturing milk price level and below, representing a loss to dairy farmers of \$1.50 per hundred-weight or more. The Director of Agriculture announced that this decision will be appealed.

California Dairy Industry Advisory Board, W. B. Woodburn, Manager.

Persuading California consumers to choose the right foods whenever they eat—especially sufficient amounts of milk and milk products—is the chief function of the California Dairy Industry Advisory Board.

The fourfold program of the California Dairy Industry Advisory Board, now known as the Dairy Council of California, provides this type of service on behalf of California's dairy industry. Its projects include advertising, education, publicity and research.

The Board's activities are "institutional" or non-brand-identified, designed to build interest in the whole family of dairy foods. Advertising materials are designed to carry a direct sales message, or in cooperation with the sales efforts of other food commodities, especially during the period of peak production and in connection with the

promotion of June Dairy Month, when the Board aids in the distribution and use of thousands of posters and display materials.

The State's dairy industry, through Board activities, is known throughout the State for its contribution to education through its service rendered to schools and to all the professional and community agencies interested in providing good informational material of many kinds for many different age groups.

The response to the educational services continues to be gratifying. Several million pieces of printed material and hundreds of films and filmstrips are requested each year.

The Board cooperates in the production of many radio and television programs. Of great importance is the cooperation given by the Board to the school lunch and school milk programs. In addition to helping make these both learning and nutritional activities, Board staff members aid in meeting some of the practical operational problems.

Assistance is given the surplus properties office in putting refrigeration facilities into schools where they are needed.

School food service personnel receive instructions on how best to use dairy foods to provide flavor, interest and high nutritional values in the lunch programs.

The Board also assists in interpreting the values and the needs of the food service programs to the public, and encourages student participation whenever possible.

One type of service provides information to fairgoers through exhibits and displays, particularly at the California State Fair in Sacramento and the Los Angeles County Fair in Pomona. It gives assistance to other groups exhibiting at county and district fairs, and it has helped to conduct public milking contests and other appropriate speciality events.

Information about the economics of dairying, the importance of the industry to California's agriculture and health, as well as significant developments related to the composition and nutritive values of dairy foods are supplied regularly through all public information media. Members of the staff make many talks to community groups.

Services are provided directly to homemakers through the continuous distribution of dairy industry pictures, recipes, and recipe booklets.

Sound information about weight control is provided as another public information service. Because of the health hazards associated with the following of extreme "fad-

dist" diets, the Advisory Board assists many groups in planning moderate programs that provide for sensible, practical approaches to weight reduction based on the use of dairy products.

The Advisory Board continues its support of basic research designed to discover additional scientific data about the nutritive value of dairy products. It has carried on projects to clarify the role of essential nutrients in human nutrition for optimum health. Some of its research expenditures are made for the purpose of achieving further improvements in the flavor and quality of specific dairy products.

The Advisory Board carries on its program activities from five offices—in San Francisco, Fresno, Los Angeles and San Diego, as well as the administrative office at the State Department of Agriculture in Sacramento.

The activities of the California Dairy Industry Advisory Board are financed by assessments paid twice a year by all producers and first handlers of milk produced and processed commercially within the State. Assessments are paid by both the producers and handlers at the rate of one-half cent per pound of milkfat on milk produced during the months of May and October. There are 25 members of the Advisory Board, representing all phases of the industry and the different geographic areas of the State.

Following are members of the California Dairy Industry Advisory Board and expiration dates of appointments:

R. A. Beaty (handler), Foremost Dairies, Inc., 425 Battery St., S.F.	10/31/61
George S. Bulkley (handler), Carnation Company, 5045 Wilshire Blvd., L.A. 36	10/31/63
R. B. Bush (handler), Safeway Stores, Inc., 2538 Telegraph Ave., Oakland 12	10/31/62
Anthony V. Cardoza (mkt. milk prod.), Rt. 2, Box 481, Tulare	10/31/63
A. H. Clark (mkt. milk prod.), P.O. Box 685, Soledad	10/31/62
Ned M. Clinton (mkt. milk prod.), Protected Milk Producers Assn., 7831 East Jackson St., Paramount	10/31/62
* George A. Dondero (handler), Petaluma Cooperative Creamery, Western Ave. and Baker St., Petaluma	10/31/61
James N. Fulmor (mkt. milk prod.), P.O. Box 577, Dixon	10/31/63
James P. George (handler), Challenge Cream & Butter Assn., 929 E. Second St., L.A. 12	10/31/63
C. V. Hansen (handler), Crystal Cream & Butter Co., 1013 D St., Sacramento	10/31/63
Walter Harpain (producer-handler), 3949 North Barton, Fresno	10/31/61

Errence E. Hauschildt (mfg. milk prod.), Rt. 2, Box 920, Galt.....	10/31/61	R. E. Osborne (handler), Knudsen Creamery Co. of Calif., 1974 Santee St., L.A.	10/31/61
Her Jessup (producer-handler), Jessup's Certified Farm, 5431 San Fernando d. W., Glendale.....	10/31/62	F. L. Parks (mfg. milk prod.), 2901 E. Alluvial Ave., Clovis.....	10/31/63
Charles A. Judson (mkt. milk prod.), Rt. 1, Box 913, Escondido.....	10/31/62	Wayne J. Peacock (handler), Wayne's Dairy, 2524 Beech St., Bakersfield.....	10/31/62
Albert M. McCune (mkt. milk prod.), P.O. Box 666, Paramount.....	10/31/62	Albert J. Pedrazzini (mfg. milk prod.), Loleta.....	10/31/61
Alexander Moore (mkt. milk prod.), #6426 Carmenita Rd., Norwalk.....	10/31/63	A. C. Pollard (mkt. milk prod.), Rt. 1, Box 5070, Turlock.....	10/31/61
S. Musser (prod.-handler), Shady Grove Dairy, E. Seventh St. & Grove Ave., Upland.....	10/31/63	Larry Shehadey (handler), Producers Dairy Delivery Co., Inc., 144 Belmont Ave., Fresno.....	10/31/62
Man Nissen (handler), Beatrice Foods Co., 2233 Jesse St., L.A.....	10/31/62	William H. Stabler (handler), Arden Farms Co., 1900 W. Slauson Ave., L.A.....	10/31/61

* Deceased.

Bureau of Shipping Point Inspection

W. PETERSON, Chief

W. STAY, Assistant Chief

The Bureau of Shipping Point Inspection is a fully self-supporting function in the field of service. This service is under a cooperative agreement with the United States Department of Agriculture and the California Department of Agriculture. The United States Department of Agriculture has similar cooperative agreements with every state.

The authority for this function is in Chapter 1, Fruit and Vegetable Certification, California Agricultural Code, and under Title 7, Chapter 1, Agricultural Marketing Service, United States Department of Agriculture, Sections 51.1 through 51.67.

The basis of certification is usually the U. S. Standards or modifications of these standards by contractual arrangements. However, any clearly written standards, whether private or industry-wide standards, may serve as the basis on which certification can be made.

Upon request from growers, shippers, and financially interested parties, the Shipping Point Inspection Service provides official certificates covering a complete record of the quality, condition, pack, size, and grade of fresh fruits, vegetables, and nuts.

The usefulness of this service is shown by its sound and rapid growth since 1920, when less than 4000 inspections were made, to around 200,000 inspections at present.

During 1960 the Bureau of Shipping Point Inspection maintained 11 permanent district offices which were active throughout the

entire year. In addition, 20 other offices were operated and 23 separate areas served on a seasonal basis. Some of these were open only for 5 to 10 weeks, while others were active for a period of 6 to 9 months.

The service has the following classes:

1. Optional service. This type of service is used by the trade to facilitate trading and to assist in the quality control to protect their brands. This represents the greater part of the volume of work for the Bureau.

2. Service under Federal and State Marketing Orders. This covered work for the interstate shipment of plums and Elberta peaches; the interstate and intrastate movement of nectarines, Bartlett pears, Desert grapefruit, cantaloups, surplus almonds, and growers' deliveries of pears and strawberries for processing.

3. Service for Canadian imports. The Canadian government requires certification by the Bureau on 25 different fruits and vegetables as an import requirement. Shipments from Mexico destined for Canada are inspected in Mexicali and Tijuana.

4. Service involving the U. S. Export Apple and Pear Act. All commercial shipments of apples and pears destined for export must be certified to show specific compliance as to grade, size, pack and other factors.

5. Service involving imports from foreign countries. For those products under Federal Marketing Order certification is required to show compliance with existing orders.

6. Service involving fresh products for processing. This is an optional service based on U. S. Standards, on industry standards or on individual grower and processor contracts.

Marketing Agreements and revisions of the standards for fruits, vegetables and nuts are activities that greatly increase the number of meetings that must be attended by supervisors and the management of the Bureau. The number of growers, shippers and processors meetings attended totaled 45 for the year.

The training activities of the Bureau consisted of 4 formal training classes, in which 53 new inspectors were trained. In addition, 18 new inspectors were trained by on-the-job training. There were also 115 inspectors who were given refresher training courses. These classes included training in 10 major commodities: pears, apples and strawberries for processing, grapes, potatoes, cantaloups, lettuce, plums, peaches, and nectarines.

The general administration of the Bureau is handled by the Chief and Assistant Chief, who are also employed on a cooperative basis as Federal Supervisor and Assistant Federal Supervisor.

There are employed 3 area supervisors and 11 district supervisors who are designated as Agents or Collaborators by the U. S. Department of Agriculture. All inspectors in the Bureau are licensed for this work by the U. S. Department of Agriculture.

The peak work load usually runs from early May through October. At times during the heaviest volume about 320 inspectors are employed, while during the slack period the personnel is reduced to about 80 men.

Inspections and Carlot Equivalents Nineteen Leading Commodities

1960

	Inspections	Carlot equivalents
Potatoes	30,404	34,570
Cantaloupes	14,610	19,011
Cannery pears	26,690	18,507
Grapes	21,639	17,169
Lettuce	11,784	9,486
Celery	11,315	8,396
Pears	5,298	5,923
Plums	6,786	4,657
Tomatoes	5,549	4,566
Nectarines	6,816	3,561
Peaches	3,667	2,908
Grapefruit	5,134	2,356
Oranges	3,133	1,892
Process strawberries	1,839	1,674
Cabbage	2,982	1,210
Lemons	1,898	1,036
Cannery apples	8,895	1,021
Carrots	1,878	730
Almonds	1,801	373

Inspections and Carlot Equivalents By Commodity Groups

	Inspections	Carlot equivalents
Vegetables	70,753	63,627
Deciduous fruits	84,607	56,031
Melons	14,647	19,045
Mixed fruits and vegetables	1,458	1,174
Nuts	1,882	387

Shipping Point Inspections for 1960

January	5,634
February	5,759
March	5,443
April	6,239
May	17,802
June	26,327
July	33,565
August	41,420
September	19,127
October	11,810
November	5,561
December	4,999

Bureau of Weights and Measures

W. A. KERLIN, Chief

B. G. WOOD, Assistant Chief

The Bureau of Weights and Measures enforces those sections of the Business and Professions Code pertaining to Weights and Measures, weighing and measuring devices, the sale of commodities in containers, public weighmasters, petroleum, antifreeze, brake fluid, standard bread loaf, and also the special provisions relating to farm products, as

contained in Division 5 and 8 of the California Business and Professions Code.

Chapter 8, Title 4, California Administrative Code, contains rules and regulations governing tolerances and specifications for commercial weighing and measuring devices, standards established for specific commodities, tare weight of containers used in de-

ary of edible agricultural commodities to processors, quality standards for brake fluid, all the procedure for sampling and testing fill of packaged commodities.

The Bureau investigates conditions in counties in respect to weights and measures, and to the sale of goods, wares and merchandise commodities and foodstuffs in containers.

Much of the weights and measures enforcement work falls upon the county sealers and deputy state sealers of weights and measures. The Bureau issues instructions and makes recommendations to county sealers governing the procedure to be followed in the performance of their duties. At least once in two years, the Bureau is required to inspect the work of the sealers and may inspect the weights, measures or weighing measuring devices of any person.

The Bureau has four major functions, the testing of weights, measures and weighing measuring devices for accuracy; inspection of automotive products and licensing of mail outlets; licensing of public weighmasters, investigations and enforcement of weighmaster laws; the quantity control of package goods and container labeling.

TESTING OF WEIGHTS, MEASURES AND WEIGHING AND MEASURING DEVICES

Weighing Section Personnel:

11 weighing equipment technician, 1 senior weights and measures investigator, 4 weights and measures inspectors.

Petrology Laboratory

Section 12310 and 12311, Business and Professions Code, requires that the Department shall inspect and correct the standards used in each county at least once in every two years.

Six thousand six hundred and eighty-one weights, liquid measures, linear measures and dry measures were certified as county standards during 1960.

Three hundred and seventeen scales used in regulatory work by other bureaus in the Department of Agriculture and used by county sealers in package checking were tested and sealed for accuracy.

Highway Patrol Scales

Section 709.5, Vehicle Code, requires that scales and weighing instruments used by the California Highway Patrol shall be inspected and certified as to accuracy at least once in each calendar year by the Bureau of

Weights and Measures. During 1960, state personnel tested and sealed for accuracy, 172 loadometers (wheel load weighers), and 19 vehicle and axle load scales.

Approval of Commercial Scales

Twenty-two commercial weighing devices were tested and approved for commercial use. Section 12500.5, Business and Professions Code, requires pre-sale and pre-use approval before a weighing device can be used commercially in California.

Vehicle Scale Testing—State Trucks

State personnel operating four state owned heavy capacity vehicle scale test trucks assisted Sealers in testing and sealing 1,715 vehicle scales at a cost to the State of \$24.56 per inspection (1959 cost figures). Inspections were made in 41 counties.

Measuring Section

Bureau measuring equipment technicians test and inspect liquid measuring devices before approving their use, as required by Article 4 (Liquid Measuring Devices); Article 6 (Vehicle Tanks), of Title 4, California Administrative Code, and Article 8, Tank Vehicles, Chapter 7 (Petroleum), Business and Professions Code. Testing and inspection of measuring devices is required by Article 14 (Fabric Measuring Devices); and Article 5, Farm Milk Tanks, California Administrative Code.

Section 12500.5, Business and Professions Code, requires pre-sale and pre-use approval before a device can be used commercially in California.

Measuring equipment technicians also advise and train county personnel in the inspection and testing of liquid measuring devices (wholesale and retail), the calibration and inspection of vehicle tanks, and testing of fabric measuring devices and cordage measuring devices in their work as weights and measures officials.

This work also includes the annual testing of liquid measuring devices used commercially in counties which do not have adequate standards for this purpose.

Inspections

Fifty-eight measuring devices were tested and approved by the measuring equipment technician for commercial use. Inspections for the year totaled 392. Two hundred and twenty-six inspections were made to assist sealers in the course of certifying equipment and training county personnel.

Work done by bureau personnel for county sealers either in their absence or because of inadequacy of equipment totaled 108 inspections of measuring devices at a cost of \$25 per inspection.

Inspections of measuring devices were made by Bureau employees in 22 counties.

Measuring Section, Liquefied Petroleum Gas, Liquid and Vapor

California is fourth among the States in the sale of liquefied petroleum gas. During 1959, liquefied petroleum gas sales in California were as follows:

Type of use	Gallons
Domestic and commercial	187,827,000
Internal combustion	47,609,000
Industrial	17,553,000
Gas manufacturing	6,197,000
Others, including chemical	90,232,000
	349,418,000

Sales for 1960 should show a 10 percent increase. At 20 cents per gallon this amounts to an annual sale of approximately \$70,000,000.

Bureau personnel assigned to this industry to determine the accuracy of measurement consists of 1 measuring equipment technician, liquefied petroleum gas; and 3 weighing and measuring equipment inspectors, liquefied petroleum gas.

Liquefied petroleum gas is sold by liquid measure, weight, or by the cubic foot. Temperature correction to 60° F. and a vapor return allowance are usually listed on wholesale sales.

Section 12500, Business and Professions Code, defines weighing and measuring instruments: Section 12500.5, Business and Professions Code, requires type approval before sale or use: Section 12501, Business and Professions Code, requires sealing before use.

The Bureau is assisted in this testing and inspection by eleven counties:

County	Type of Co-operation
San Diego	liquid meter testing
Orange	new vapor meter testing
Riverside	partial vapor meter testing
San Bernardino	vapor meter testing
Los Angeles	partial vapor meter testing and liquid
Ventura	vapor meter testing
Kern	liquid meter testing
Fresno	liquid meter testing
Tulare	new vapor meter testing and liquid
San Mateo	new vapor meter testing
Humboldt	liquid meter testing

The Bureau performs the liquefied petroleum gas testing in the other 47 counties.

It is estimated that 33½ percent of the time of liquefied petroleum gas personnel is allotted to training county personnel.

Inspection of Automotive Products and Licensing of Retail Outlets

The purpose of gasoline, distillate and oil inspection of automotive products and licensing of retail outlets under the Bureau of Weights and Measures, Department of Agriculture, is to prevent misrepresentation and fraud in the advertising and marketing of petroleum products in California; and to assure the public that these products, including gasoline, motor oil, antifreeze and brake fluid, meet the minimum standards of quality and quantity as established by the Department of Agriculture.

During 1960, state petroleum products investigators and county sealers of weights and measures made 34,953 inspections of garages and service stations from which were being sold at retail, motor fuel, motor oil, antifreeze and brake fluid; 4,761 samples of these automotive products were analyzed in the laboratories and 5,458 field samples were analyzed; 2,233 written orders to conform were issued requesting compliance to the Petroleum Code and 5,531 illegal signs were corrected. Prosecutions totaled 46, with 44 convictions.

There was also a busy work period in connection with the issuance of 103,251 motor fuel pump license tags. In addition to these "tags," the Bureau issued permits authorizing the sale of 81 antifreeze brands, and issued permits authorizing the sale of brake fluid under 101 brands.

As in past years, most of the prosecutions involved the adulteration and misrepresentation of motor oil.

Laboratories

The Bureau maintains petroleum products laboratories at South Gate, for Southern California and at Sacramento, for Northern and Central California. These laboratories require the services of three laboratory chemists: one chemist at South Gate, and two chemists at Sacramento. These chemists are highly trained and experienced in their field and qualify as expert witnesses. The laboratory chemists perform tests on *field samples*, which are brought in or sent in by the state investigators, county sealers, federal agencies, and others; or *registration samples*, which are sent to the Sacramento laboratory by the manufacturer for registration of the product.

Laboratory Test Procedures and Specifications

The laboratory test procedures are obtained from the most recently published methods of the American Society for Testing Material and other nationally recognized testing agencies, or from technical organizations, such as American Oil Chemists' Society, American Petroleum Institute, National Bureau of Standards, and Society of Automotive Engineers. Specifications are usually taken from the recommendations set forth in the latest Society of Automotive Engineers Handbook, or, are from those generally accepted in the petroleum industry. Specification standards not expected to change frequently are incorporated in the Business and Professions Code as law. However, departmental regulations are issued, as deemed necessary, to change or alter any specification. Some laboratory tests and specifications are standard tests used by chemists and are found in standard texts, and may not be found in other literature. The chemists exercise rigid standardization procedures in using chemicals in the laboratory calibration of instruments.

Licensing of Public Weighmasters, Investigations and Enforcement of Public Weighmaster Laws

In 1960 there were 4,197 licensed public weighing locations in the State, 2,581 of which were principal place of business locations and 1,616 were additional weighing locations. Eighteen thousand seven hundred eighty-two public weighmaster licenses were issued to persons authorized to do public weighing. Public Weighmasters are bonded to the State of California to the extent of one thousand dollars and are responsible for accuracy of the state certificate of weights and measures which they issue.

California law provides that any person acting as a public weighmaster who weighs, measures, or counts any commodity and issues therefor a signed or initialed statement or memorandum of weight, measure or count accepted as the accurate weight, measure or count upon which the purchase or sale of the commodity is based.

Ninety percent of the three billion dollars of California farm production was bought and sold on the basis of weight, measure, or count certified by public weighmasters. Nine million nine hundred and twenty-nine thousand certified weighings were made by public weighmasters for baled cotton, and

other thousands of weight certificates were issued for cotton seed and field cotton.

In 1960, 492,000 weight certificates were issued as a basis for payment to sugar beet growers and approximately 335,000 twenty-ton truck loads of hay were sold on the basis of certified weights.

Because seasonal help and itinerant labor often perform this important work, there is a need for close supervision and training of deputy weighmasters.

State investigators make some routine inspection of weighmaster operations but most of their time is devoted to investigating complaints of alleged incorrect or false weight certificates.

The majority of weighmaster complaints or container tare complaints are received from buyers.

Container Tares

During 1960 the Bureau established official container tares at 124 canneries and processors as provided in Article 1, Chapter 2, Division 5 of the California Business and Professions Code.

In establishing a tare weight, the Sealer weighs 1,000 containers of the type or types being utilized by the shipper, processor or handler. He sends this information to the Chief of the Bureau of Weights and Measures who determines the tare weight to be used, based on the average weight of the containers weighed. The tare weight established in this manner is the effective established tare and continues until changed by the Department.

Establishing container tares is an important function of the Bureau. Through rotation of boxes, more than 90,000,000 field lugs were used in harvesting the 1960 tomato crop. Forty field lugs and one pallet are used in transporting each ton of tomatoes. In the harvest of this great crop tare weight was deducted 90,000,000 times in computing the payment to be made to the farmer. It is estimated that approximately 300,000,000 field lugs are required to move the annual fruit, nut and vegetable harvest from farm to market. An error of a half pound could be disastrous either to the grower or to the processor.

Tare weights were reviewed 223 times, either at the request of interested parties or on the Department's own motion, and were re-established according to the average weight of the containers weighed.

Containers were reweighed as many as twelve times at some canneries during the 1960 fruit harvest season.

The field lug is being replaced in harvesting some fruit and vegetable crops with a larger container called a tub or bin. These containers hold from 20 to 40 field lugs, or from 1,000 to 2,000 pounds of fruit, vegetables or nuts, and weigh from 100 to 300 pounds when empty. Where possible, the Bureau also establishes tare weights for the larger containers, but when the weight dispersion of the individual containers is too great, the tare weight must be marked on each individual container, or the empty container is weighed each time it is used.

Quantity Control of Package Goods

The sale of commodities in package form has increased over the years to the extent that more than 95 percent of commodities purchased by consumers are packaged. In a supermarket, only one item out of twenty items purchased is required to be weighed at the checkout stand at the time of sale.

Prepackaged items fall into one of two categories: "standard" weight packages which are machine filled at the processor's place of business where the net quantity is guaranteed by the packer and marked on the label, or "random" weight packages where the weights of different packages of the same commodity vary depending on the size of the cut; the weight and total price of a package is determined by the price per pound at the place of business.

In former years it was the practice of county weights and measures officials to "spot check" the weights of different commodities on the shelves of a store or supermarket at the time the scales were tested.

Packages containing less quantity of a commodity than represented may be marked "off sale" and required to be repacked or relabeled before being retored to the shelves. This was a tedious, time consuming business. As a great deal of time was required to check packaged commodities, the need for a technically up-dated procedure was apparent. Section 12211, Business and Professions Code, was amended by the 1957 Legislature to provide for a uniform procedure in sampling and check-weighing and for reporting results of package testing. Departmental hearings were held and the procedure to be followed by Sealers in sampling and check-weighing packages was incorporated in Title 4, California Administrative Code.

Five additional Bureau positions were created to facilitate the training of personnel and to coordinate the activities of county sealers of weights and measures. The first position was filled January 3, 1961, in the hiring of a specialist in the field of quality and quantity control systems and techniques.

Five state-wide surveys were conducted by the Department in all sections of the State during 1960, on commodities that were continually being reported as short weight, having incorrect labels, or lack or quantity labels. Sealers were requested to make a package survey during a specified period and report their findings to the Bureau. Turkeys were checked during Thanksgiving and Christmas holidays.

SUMMARY OF COUNTY REPORTS

<i>Tobacco</i>	Tins and packages of smoking tobacco
39	off sale orders
1,436	packages off sale for short weight
26	labeling violations
<i>Bread</i>	For conformance to standard weights
14,401	loaves of bread weighed
1,604	loaves did not conform to standard weights and were marked off sale
<i>Out-of-state Ice Packed Poultry</i>	
818	cases were actually weighed representing a total of 12,234 cases—24 birds to the case
11,166	cases were marked off sale and relabeled —1.397 lbs. per case—average shortage
<i>Advertising and Label Violations in the Sale of Barbecued Chickens</i>	
421	establishments visited
96	violations were reported
68	written orders to conform issued
40	other actions taken by sealers
<i>Fresh and Frozen Turkeys</i>	
	Checked at the retail and wholesale level during the holiday season
74,331	turkeys were checked during the test period
7,009	turkeys were marked off sale
179	off sale orders were issued

We now have sound regulations to carry out the procedures in the field of sampling and testing of consumer size packages.

The procedure places the burden of responsibility on the packer in that, based on a small sample, his entire lot may be condemned by the weights and measures official if short weight or short measure packages are found. This means that the packer bears the cost and responsibility of sorting and repackaging.

In 1961 there should be major accomplishments in this important field of weights and measures operations.



Grenache grapes—near Ripon.

DIVISION OF PLANT INDUSTRY

ALLEN B. LEMMON, *Chief*

Responsibilities of the Division of Plant Industry include major activities in the regulatory, protective and service fields, including regulation of materials used to control various pests, control of deleterious pesticide residues, grading of field crops, regulation of agricultural warehouses, and prevention of fraud in sale of seeds, feeds, fertilizing materials, and nursery stock.

Prevention of the introduction and spread of insects, plant diseases, nematodes and other crop pests requires special attention.

Many of the Division's functions are performed in cooperation with County Agricultural Commissioners.

Increased attention is being given to problems of agricultural damage by air pollution (smog). The Division Chief has provided the Department Director with staff assistance in the Director's duties as a member of the State Motor Vehicle Pollution Control Board.

The work of the Department has been coordinated with other public agencies, such as the U. S. Department of Agriculture and the University of California, in a well-planned attack on pear decline.

The Division also coordinated Department activities resulting from the discovery of three Oriental fruit flies in Southern California in 1960. An integrated state-county program was developed and completed successfully.

The Division Chief served as principal staff assistant to the Director in the Director's duties as secretary of Governor Edmund G. Brown's Special Committee on Public Policy Regarding Agricultural Chemicals. The committee included outstanding experts in the fields of nutrition, medicine, toxicology, public health, and agriculture. After extensive study, the committee reported to the Governor that the great preponderance of evidence had convinced the committee that California's food supply is safe. A number of recommendations in the field of policy were made.

The annual report of the Division of Plant Industry covers the calendar year of 1960. As part of the Department reorganization, the work of the Bureaus of Chemistry and Field Crops has been assigned to other divisions.

Bureau of Chemistry

BERT Z. ROLLINS, Chief

WITT BISHOP, Assistant Chief

The Bureau of Chemistry administers those portions of the Agricultural Code pertaining to fertilizing materials, economic poisons (pesticides), spray residue, agricultural pest control business, and the use and application of injurious materials.

The headquarters office is located in Sacramento. District field offices are maintained in Los Angeles, Sacramento, San Francisco, and Visalia. Late in 1960 the long established district office in Visalia was moved to the new State Building, 2550 Mariposa Street, Fresno.

Samples of the various materials under jurisdiction of the Bureau, are collected throughout the state by inspectors and are analyzed and examined for compliance. Most analytical work is performed in the main chemical and bioassay laboratories in Sacramento. Smaller laboratories specially equipped to make pesticide residue determinations only, are operated in Los Angeles and San Francisco—near the major wholesale produce markets.

Analysis of Official Samples

During 1960 samples were analyzed representing 2,886 commercial fertilizers, 351 agricultural minerals, 17 soil amendments, 1 auxiliary plant chemicals, and 1 manure—making a total of 3,261 fertilizing materials samples. In addition, samples were drawn representing 1,796 pesticides, 2,706 lots of fruits, vegetable, and fodder for various pesticide residues, and 986 miscellaneous samples for a grand total of 8,749 samples. Miscellaneous samples include analyses made for other bureaus of the Department, the University of California, and samples submitted by county agricultural commissioners to provide information required in connection with their official work.

During the year, each laboratory was provided with paper chromatographic analytical equipment to expedite pesticide residue analyses. Through use of this equipment, samples of fruits, vegetables, and fodder, are readily screened for a number of chlorinated hydrocarbon residues.

Commercial Fertilizers

State law provides that a certificate of registration must be obtained by persons or firms before offering commercial fertilizers for sale; also, that each lot, parcel, or package, shall bear an acceptable label.

During the fiscal year, 468 firms, or individuals, obtained registration for their commercial fertilizers. The number of registered firms has continued to increase each year, resulting in a record number of registrants in 1960, an increase of 11 registrants over the previous year.

Each registrant is required to submit a statement of sales within one calendar month after the expiration of each quarter. Their reports are all subsequently subject to audit.

Tonnage of commercial fertilizers sold in California has also increased. A total of 1,275,463 tons were reported for the calendar year.

Audit was made of the records of 313 commercial fertilizer registrants. The records of 260 firms were found to be accurate, 47 were short in their payments of tonnage license tax, and 6 overpaid. Audit for the year resulted in payment of tonnage license tax on 12,404 tons of commercial fertilizers. Refunds were made to firms overreporting 1,882 tons. Most of the mistakes in reporting tonnage license tax arise from misunderstanding of which registrant in a chain of sale was responsible for payment.

During the year, 2,886 official samples of commercial fertilizers were analyzed. A total of 339, or 11.74 per cent, was found to be deficient and below the tolerances provided by law. This is approximately 3.75 per cent less than the previous year.

Field inspectors made 152 on-the-spot hydrometer tests of lots of aqua ammonia throughout the state.

Investigative interviews were held with several manufacturers of fertilizing materials to permit them to show cause why criminal complaint should not be filed for their failure to comply with the requirements of law.

Quarantine action was taken against several lots of material which were found to be seriously deficient. In one instance a supply of liquid fertilizer was quarantined when it was found to contain a layer of black liquid with a pungent odor. Investigation indicated the drums were previously used for ethylene dibromide, a soil fumigant, and were not properly cleaned before use.

A survey of fertilizing materials, sold in small packages from retail store shelves, was made in a large metropolitan area. This was in addition to the continued attention to commercial grower products sampled by inspectors wherever found. The survey indicated retail store managers have a strong tendency to offer statewide advertised items that are in demand by reason of the advertising.

Each year an increase has been noted in the use of liquid fertilizers. Tonnage reported for 1960 indicates that 483,106 tons of liquid fertilizer were used during the year, representing 38 per cent of the total fertilizer sold.

Agricultural Minerals

Agricultural minerals include mineral substances, mixtures of mineral substances, and mixtures of mineral and organic substances containing less than 5 per cent of the three primary plant foods.

Nutrient sprays, or dusts, intended to be applied directly to plants or to soil to alleviate nutritional deficiencies, are agricultural minerals. They are subject to all of the requirements, including registration, labeling, and payment of tonnage license tax.

During the year inspectors collected 351 official samples of various agricultural minerals. Sample data show that 70, or 19.94 per cent of the samples, were deficient below the tolerance permitted by law. In many of these cases, delivery of additional tonnage without cost, or a credit extended to purchaser was made by sellers to demonstrate good faith.

Tonnage of agricultural minerals sold during 1960 amounted to 1,102,043 tons compared to 1,181,342 tons sold during the previous year. As in the past, gypsum accounted for the major tonnage. However, tonnage reports reflect a substantial reduction of 76,000 tons from the previous year.

Audit of the sales records of 165 registered firms showed that 15 firms submitted reports which were short 4,072 tons. Overpayment on 1,234 tons was reported by three firms. In each case proper collections, or refunds,

were made where a discrepancy was found.

Criminal complaints were filed against two firms marketing agricultural gypsum when official samples of their products indicated repeated deficiencies. One of the firms was fined \$50, plus \$2.50 court costs, and the company owner was given a six months suspended jail sentence. The other firm was fined \$150, of which \$100 was suspended pending future compliance with the law.

A hearing was held by a district attorney in one instance, when a registrant repeatedly failed to submit tonnage license tax reports when due.

Auxiliary Plant Chemicals

Auxiliary plant chemicals include substances such as hormones, auxins, materials for reducing pre-harvest fruit drop, and for rooting cuttings, bacterial inoculants and similar products intended to influence plants.

During the fiscal year 1959-60, 64 firms secured no-fee registration for 127 various brands of auxiliary plant chemicals. The previous year 56 firms had secured registration for 180 brand name materials. The reduction in the number of registered products is attributed to the fact that many of the products, designed for use on food crops, came under jurisdiction of new laws that resulted in need for further research before use. Federal laws now provide that growth regulators require registration and labeling as pesticides; and these laws put limits on possible residue at harvest time. Therefore, until further data were gained, manufacturers withdrew some products from sale.

Soil Amendments

Each year several complaints are received from dissatisfied purchasers of soil amendments. Many products like peat moss and leaf mold are marketed just as they are scraped up or collected. No license is required to sell soil amendments nor are any labeling requirements established. Purchasers should thoroughly examine these materials before purchase to determine if they are suitable for use.

Dealers of some soil amendments choose to label their products and often include guarantees for small amounts of plant food. During the year 17 official samples of soil amendments were analyzed to determine if the products conformed to label guarantee. Materials analyzed were of varied composition including peat, leaf mold, liquified sea-

eed, and a mixture of processed forest mulch and peat moss. Two investigations were conducted when product misrepresentation was suspected.

Pesticides

Continuous inspection and sampling of pesticides found offered for sale in the state resulted in collection of 1,796 official samples to check labeling and composition against the guaranteed analysis. Of the samples analyzed, 180, or 10 per cent, were found to be below label guarantee.

During the fiscal year 1959-60, a total of 119 firms secured registration of pesticides, an increase of 65 firms over the prior year. General unrestricted registration to sell pesticides was issued to 887 firms. Restricted registration, limiting firms to the sale of pesticides not to exceed a total retail value of \$500 annually was issued to 232 firms.

A total of 14,867 products were registered for the year. This number of products exceeded the previous year's registration by 1,081 brand name products.

The total samples drawn represented a decrease of 18.36 per cent from the previous year. A change of emphasis with increased activity devoted to pesticide residue inspection and sampling was accountable for the reduction in pesticide samples.

A total of 55 exempt-fee registrations was granted to county agricultural commissioners and public agencies who regularly sell or apply pesticides at cost.

Several new compounds were registered as pesticides for the first time during the year. Materials included sulfuric fluoride, a fumigant for termite control; Bayer 29493, an organophosphorus compound, for use against mosquitoes; and Cefro, containing thyl 2,3,4,5-tetrachlorotetrahydro-2-furoate and related compounds as a rodent repellent. Herbicides included Urab, containing 1-phenyl-1,1-dimethylurea trichloroacetate; Fenac, containing a sodium salt of 2,3,6-trichlorophenylacetic acid; Tillam (for experimental use only) containing propyl ethyl-N-butylthiolcarbamate; and barban, containing 4-chloro-2-butyryl m-chlorocarbanilate; and hexachloroacetone for use as a desiccant for alfalfa.

A sales representative for a pesticide manufacturer was fined \$200, plus \$5 tax, for having recommended the use of toxaphene to treat a field of alfalfa within 10 days of harvest. When an officer of the company testified that the grower had been paid

\$1,700 for the loss of hay, and cutting cost, all but \$25 of the fine was suspended. The salesman was placed on summary probation for three years on condition he violate no part of the Agricultural Code.

Agricultural Pest Control

During the calendar year 1,422 persons or firms secured agricultural pest control licenses, an increase of 30 operators over the previous year.

Much of the time of field supervisors was spent investigating reports of careless operations, disposal of empty containers, or other infractions of laws or regulations to determine which cases required disciplinary action.

Several such investigations lead to court action. One operator was fined \$150, plus court costs, due to his failure to register with the county agricultural commissioner as required by law.

Prosecution is seldom invoked unless discussion with the persons involved fails to secure proper compliance.

Two firms were prosecuted during the year for failure of each to obtain a state license and register with the agricultural commissioner. One was fined \$150, plus court costs, and placed on probation for two years. The other was fined \$25 and sentenced to six months in jail. Jail sentence was suspended for three years pending future compliance with law.

Several investigative interviews were held with pest control operators for suspected violations of law. One interview involved treatment of seeds with materials not registered for such use by a firm whose license did not include seed treatment.

State law provides that each applicant for a license shall satisfy the director of his qualifications, responsibility, and good faith in seeking to carry on the business of pest control.

One applicant was refused a license to engage in pest control when it appeared that he had no intention of becoming a pest control operator, but intended to turn the business over to an agent who could not, himself, obtain a license because of probationary terms barring him from holding such a license.

In one instance, an order to cease operations was served when the only qualified member of a firm was drafted into the armed services and the remaining partners refused to establish their qualifications.

Public hearing was held to consider

amendments to the regulations pertaining to agricultural pest control operators. The regulations were amended to require that all persons engaged for hire in the business of pest control keep each ground rig and each nurse rig conspicuously and legibly marked with the name and address of the operator and the deliverable capacity of the tank or hopper. The regulations were further amended to permit a grower to authorize a commercial operator to do certain work that formerly only the grower could legally do himself. Further clarification was made concerning the requirement that no pesticide, or emptied container thereof, be dumped or left unattended where it is likely to present a hazard to persons, animals, or crops.

Aircraft in Pest Control

Certificates of qualifications were issued to 498 pilots during the year. Apprentice pilot certificates amounted to 215, reflecting an increase of 17 over the previous year.

Many cases of organic phosphate poisoning of pilots and loaders were reported throughout the central valley area; particularly after an unprecedented increase in the use of Phosdrin, a highly toxic organic phosphate. Investigation revealed both pilots and loaders had ignored use of protective measures, allowing their clothing and shoes to become contaminated with the material.

Four pilots were fatally injured in airplane accidents during the year. One death occurred in a training plane crash not equipped to apply pesticides. Another was en route to start a spray job, and two hit wires in the fields they were treating. A stepped-up safety program initiated by the Agricultural Aircraft Association appeared responsible for a reduction in crashes and injuries over previous years.

After an administrative hearing, one operator's license was suspended. Evidence indicated the operator had failed to perform his work in a thorough and workmanlike manner.

An investigational hearing was conducted for an aircraft pest control operator because a high-pressure spray hose broke, allowing the spray to discharge while over a field of ready-to-harvest lettuce. Although the lettuce was rendered unusable, and was disced under, there appeared to be no violation of law by the operator.

Injurious Materials

It has been common practice, since 1956, for strawberry growers to fumigate land

with chloropicrin before planting, to control soil fungi and other soil pests. The highly irritating gas escaped from the soil, where work was done near subdivisions, and drifted into nearby homes, causing much alarm in several instances.

During the year, therefore, the injurious materials regulations were amended to include chloropicrin used for soil fumigation in Orange County. The regulations require that the material be used only by permit from the county agricultural commissioner and who also prescribed conditions for its use.

In addition to other requirements, the regulations also provide that when the material is used within 1,000 feet of an occupied dwelling, the householder's consent must be obtained in writing, and the area must be covered with a gas-tight covering for 24 hours following treatment. Since the regulations have been in effect, no further complaints occurred.

After hearings as prescribed by law, the injurious herbicides regulations were amended to extend further portions of San Luis Obispo County, in which highly volatile esters of 2,4-D may be used. At the same time portions of eastern Merced County were removed from the defined boundaries of the hazardous area, wherein use of 2,4-D is rigidly limited.

Sale or possession of products containing thallium are prohibited in California except for ant poisons containing not more than 1 percent of thallium expressed as metallic in tamper-proof containers.

When illegal shipments of rat and mole thallium baits were observed being offered by dealers in a metropolitan area, the stocks were promptly quarantined out-of-sale. The dealers involved arranged to return the products to the eastern manufacturer.

Late in 1959 criminal complaint was filed against the Portland, Oregon, branch of a California registrant, charging eight violations of the Fertilizing Materials and Injurious Materials Articles of the Agricultural Code. The firm was charged with selling a fertilizer and pesticide mixture, containing an injurious material, to persons who did not hold a valid permit to use injurious materials. The firm pleaded not guilty and posted \$800 bail. A jury trial was requested. Early in 1960 the firm notified the court it would forfeit the bail plus 5 per cent court costs.

A survey of small-package 2,4-D products, offered for sale by nurseries and garden

apply dealers, was conducted in Southern California.

Injurious herbicides regulations require dealers selling more than one pint of material to a customer in any twenty-four hour period to obtain first a signed statement from the purchaser of 2,4-D products, stating he has a valid permit, and giving the permit number.

When informed of the requirements, many dealers returned their stock of quart containers, or attached a sticker label indicating that a permit is required before sale can be made.

Agricultural Chemical Damage to Crops

Damage to crops from pesticides is frequently reported to this Bureau which investigates to determine if any violation of law is involved. Some cases involve faulty products, but more commonly, the damage has followed careless or improper application of material.

Persons suffering loss or damage from use or application of pesticides by others, must within 60 days from the time of loss, file a report of loss with the county agricultural commissioner.

A total of 41 known reports of loss was filed for Central and Northern California during the year. Of the total reports on file, 25 were attributed to applications of materials by ground-operated equipment. Aircraft operations resulted in 15 of these loss claims. One of those reported was of unknown origin. Although some reports of loss may be inconsequential, or represent no actual crop loss due to pesticides, there are obviously other cases of damage for which no report of loss is on file.

Most reports of loss filed concern drift of 2,4-D onto crops, DDT drift on alfalfa, and injury to honeybees in apiaries adjacent to treated areas.

Extensive damage to grapes, olives, and avocados, was reported from one area. Investigation indicated the injury was caused by aircraft application to barley more than two miles away.

A large acreage of vegetables was injured when 2,4-D was applied on slopes of range-land in late May for control of yellow star thistle.

Injury to Persons and Animals

Accidents and injuries involving agricultural chemicals are investigated to determine if any violation of law contributed to

the mishap. Study of details in some cases provides suggestions for improvement of precautionary labeling.

During the year, four deaths were reported in which pesticides were involved. All of the deaths were caused by arsenic trioxide weed killers and involved children under three years of age.

One death resulted when a child ate dirt which had been treated with the weed killer. Another child drank the concentrate material from a beer bottle.

As in former years, several reports of livestock injury were reported by county agricultural commissioners. In one instance a farmer sprayed 30 bull thistle plants in his pasture, using the recommended dosage of sodium arsenite solution. The next day one cow died. An autopsy indicated arsenic poisoning. Although a veterinarian treated the surviving animals, during the next two days five other animals died. Residues of arsenic sprays are suspected of having an attractive taste to cattle. They are known to seek out and eat treated vegetation, or lick bare, treated areas.

Spray Residue Enforcement

Inspection of fresh fruits, vegetables, and hay for pesticide residues was performed regularly throughout the state. Inspection of hay was increased to assure freedom from residues that would cause contamination of milk.

California's spray residue law applies to pesticide chemicals added to produce which is defined as any food, either for man or other animals, in its raw or natural state when in such form as to indicate it is intended for consumer use without any further processing. In a formal opinion dated June 30, 1960, the State Attorney General advised that the law included application to milk and cream, alfalfa hay which has been dried and compressed into pellets, and other commodities that may have undergone a limited change.

The spray residue article of the Agricultural Code lists specific tolerances for lead, arsenic, trioxide, fluorine, and DDT in produce and grants the Director of Agriculture authority to make regulations establishing other tolerances. In April, 1960, a public hearing was held on regulations to establish state tolerances for pesticide residues. The regulations, which became effective on August 29, 1960, establish tolerances that are essentially the same as those established by

the Federal Food and Drug Administration. In addition the state tolerances spell out the federal policy of zero for all pesticides in milk and cream. The California regulations depart from federal requirements in that they establish a tolerance for DDT of 0.5 part per million in produce sold for feeding dairy animals. This tolerance is based on information that this level will not result in detectable amounts of DDT in milk.

The law makes it unlawful to pack, ship, or sell any produce carrying spray residue in excess of the permissible tolerance.

In performing inspection of produce, regular daily visits are made to the wholesale produce markets of Los Angeles and the San Francisco Bay area. Intermittent inspections are made of produce sold in the San Diego, Sacramento, and other wholesale produce markets in the state. In addition to the inspection on the wholesale markets, samples of produce were drawn from retail markets in Southern California and in the Sacramento Valley during the year.

The general laboratory in Sacramento analyzed samples of produce submitted by inspectors in the district as well as many samples submitted by agricultural commissioners and other official collaborators in connection with investigations. Additional analyses are made in a temporary laboratory in San Diego. The spray residue samples analyzed in Sacramento include many that are submitted by county agricultural commissioners and other official agencies that result from special investigations rather than the routine inspections made by Bureau of Chemistry personnel. One of the aspects of spray residue enforcement work that required greater attention this year was the sampling and analysis of hay intended for dairy animals. This resulted from the concern of milk producers that milk and milk products contain no trace of any pesticide. Dairymen were cautioned by creamery operators and distributors not to feed materials containing residues of any pesticide until there was suitable information that there would not be contamination from the feeding material.

During the year 2,706 samples were analyzed for pesticide residues. There were many more individual analyses than indicated by the number of samples as determinations for more than one pesticide were made on many samples.

Residues in excess of tolerance were found on 141 lots in the state. Of the total number

of samples analyzed, 2,166 were original samples of suspected lots in channels of trade. These include 453 samples of hay and fodder. The 6.5 percent of samples with illegal residue is higher than would be found by random sampling of all produce offered for sale since inspectors selectively sample those commodities that are suspected to carry excessive residue. Appearance of visual residues, odor of pesticide, or knowledge of irregular pest control application, are factors that may warrant sampling of a commodity.

When produce was found to carry over-tolerance amounts of residue, it was quarantined out of sale and held pending reconditioning or proper disposition. Investigation is usually made to determine cause of the excessive residue and to prevent further delivery of produce that will be in violation.

When violations occurred, warning letters were sent, or interviews were held with growers to determine how the pesticide was misused and to warn of requirements of law. In addition to 17 persons who were warned in interviews, criminal complaint was filed against 15 persons for shipping produce with illegal residues. At the end of the year 13 had been found guilty and two cases were still pending.

In response to requests, the Chief and other representatives of the Bureau appeared at many meetings of fruit and vegetable growers, dairy and livestock and other groups to discuss pesticide residue requirements. There was greater interest in pesticide usage and residues by those in production, handling and processing of agricultural commodities than in any previous time.

On the recommendation of the Director of Agriculture, early in the year, the Governor requested an augmentation of the Department's budget for added spray residue enforcement. This was granted by the Legislature. The additional funds permitted an increase in the staff to handle additional inspection and consequent analytical work as well as a new spray residue laboratory to be set up in Fresno. It also permitted the purchase of a gas chromatograph and a new infra-red spectrophotometer with accessories which can greatly facilitate analyses.

The greater concern about residues in milk and the feed of dairy animals also made a greatly increased demand for commercial laboratory service for determination of pesticide residues. In adhering to its long-established policy, the Bureau of Chemistry

confined its analytical work to samples drawn by inspectors and official collaborators.

An unusual occurrence with regard to residue involved a person in Northern California who purchased six grapefruit produced outside of the state and packed in a plastic bag. The person became ill after he started to eat one of the grapefruit, and after treatment by his physician, and investigation, analysis revealed all the grapefruit were heavily contaminated with cyanide. A survey was made of markets throughout the state and particularly of shipments made by the grower of the contaminated lot, but no trace of cyanide was found in the several hundred samples analyzed by the Bureau of Chemistry, the State Department of Public Health, and other agencies. Intensive investigation failed to yield any explanation. Citrus fruits from other areas have been required to be fumigated with hydrogen cyanide; but this procedure has been standard for many commodities for years, and no hazardous residues are left in foodstuffs properly treated.

Public attention to pesticide residues in foods was stimulated by the seizure of raspberries with illegal residues of a weed killer by the Federal Food and Drug Administration in 1959. More intensive interest developed also with regard to the significance of pesticide residues in milk and milk products. In view of this interest and public concern, Governor Edmund G. Brown, in June, 1960, appointed a fifteen-member committee on Public Policy Regarding Agricultural Chemicals. Members of the Committee consisted of persons with expert knowledge in toxicology, agricultural chemicals, public health, agriculture, nutrition, and consumer problems. The Committee held six meetings at which many persons testified on the use of pesticides and the significance of residues to public health. In addition to the testimony statements were submitted by specialists in various fields of

agriculture, fish and wildlife, nutrition, entomology, and toxicology related to the study. The regulatory program of the California Department of Agriculture for spray residue inspection, licensing and regulation of sale and use of pesticides was described to the Committee. In its report submitted to the Governor the Committee concluded, "The great preponderance of evidence presented convinced the Committee that at this time our food supply is safe. No evidence is presently available that there is any danger of anyone being poisoned by pesticide residues in food."

Publications

Special Publication No. 278 was issued covering results of analyses of 2,199 official samples of pesticides analyzed during the fiscal year 1958-59. For the first time, the special publication includes a table showing the standing of registrants represented by 10 or more samples.

Special Publication No. 279 was issued presenting results of analyses of official samples of fertilizing materials analyzed during the calendar year 1959.

Several announcements were issued containing information of interest to registrants, pest control operators, dealers and salesmen of agricultural chemicals.

Bureau of Chemistry Reorganization

Late in 1960, the Department of Agriculture began a reorganization to enable its employees to carry out their responsibilities and programs in a more effective manner.

In the Bureau of Chemistry, the laboratory and inspection functions were reassigned. Inspection functions of the Bureau of Chemistry and Bureau of Field Crops were combined into a unit known as Field Corps and Agricultural Chemicals. The several chemical laboratory functions of the Department were consolidated into one unit, which henceforth will be designated Division of Chemistry.

Bureau of Entomology

ROBERT W. HARPER, Chief
STEWART LOCKWOOD, Assistant Chief

The Bureau of Entomology performs specific regulatory and service functions as follows: insect pest detection and surveys; eradication and control programs; commodity treatment and general pest control investigations; cooperative reporting of insect conditions; taxonomic identification; and supervision of apiary inspection.

INSECT PEST DETECTION AND SURVEY

The Bureau operates an annual state-wide insect pest detection and survey program designed to provide the minimum effort necessary to assure early discovery of incipient establishment of dangerous agricultural insect pests in California. As in the past, each county was presented a proposed minimum level detection program and urged to accept responsibility for providing the assistance to carry it out. State Department of Agriculture help was offered where unusual personnel or program needs warranted it, and provided training, detection equipment and, when desired the technical field help required to start the new programs.

Fruit Fly Detection

Late in July a California Department of Agriculture fruit fly trapper found a single female Oriental fruit fly, *Dacus dorsalis* Hendel, in one of the McPhail traps he had placed in an orange tree on the outskirts of Anaheim, Orange County.

Seven weeks later at Carpinteria, Santa Barbara County, a State Department of Agriculture fruit fly trapper found a single female Oriental fruit fly in one of the Steiner traps of his regular trapping route along the coastal area of Ventura, Santa Barbara and San Luis Obispo Counties. The trap was located in an avocado tree on the property of a petroleum ship-loading installation.

These discoveries provided graphic evidence of the necessity for maintaining a regular, adequate pest detection program, employing the best known equipment, methods and utilizing the services of expertly trained personnel.

The Department's over-all fruit fly trapping programs for 1960 were essentially the same as the previous year. Steiner traps, baited with the multiple-purpose lures, specifically attractive to the males of the Medi-

terranean, melon and Oriental fruit flies, and the glass McPhail traps, baited with State Protein Insecticide Bait No. 7, and attractive to Mexican fruit fly and to fruit flies in general, were used in the subtropical climate areas of Southern California.

In the more temperate Central and Northern California, cardboard Frick traps were used. The Frick traps were baited with powdered ammonium carbonate emitting ammonia gas attractive to all groups of fruit infesting flies. Areas of higher elevation in Southern California were also trapped with this "All-Purpose" Frick trap.

Cotton Insects

Search for pink bollworm, *Pectinophora gossypiella* (Saunders), and other major cotton insect pests again consisted of four phases: blossom inspection, argon ultra-violet light trapping, gin trash inspection, lint cleaner inspection and green boll examination. *No pink bollworms were found.*

Blossom inspection is conducted annually in June and early in July when the very first blooms appear on the cotton plant. Inspectors are trained to search the young plants for the abnormal "pin-wheel" blossoms which result from a pink bollworm larva webbing the petal edges together.

Detection forces continued a program of night trapping with argon ultra-violet light provided by the U.S. Department of Agriculture. This search was intensified in Imperial County after the find of a single adult pink bollworm female in a light trap in adjacent Yuma County, Arizona, in April. A total of 147 traps was serviced over 18 times during 26,000 trap days' exposure.

Gin trash inspection was hampered in Imperial Valley by over-heating of seed cotton in the gins. The almost total shift from hand-picked to machine-picked cotton, combined with efforts to gin the cotton faster, resulted in gin use of reel and tower drum temperatures sometimes exceeding 350°. Gin trash exposed to such heat is charred and dehydrated to the point of worthlessness as far as pink bollworm detection is concerned.

As yet this problem is not as severe in areas outside the Imperial Valley. The U.S. Department of Agriculture is searching

TABLE 1
Defection-Survey Programs—1960

Insect	County	Man-days		Total	UNITS INSPECTED					Traps in service
		State	Federal		Acres	Properties	Hosts	Blossom-bushels cleaners-bolls		
Pink bollworm	138	142	261	541	62,314	719	—	3,305,367	—	—
Blossom inspection	761	154	312	1,227	—	—	—	—	147	—
Argon light trapping	488	332	42	862	—	—	—	33,386	—	—
Gin trash inspection	22	11	82	115	—	—	—	7,845	—	—
Lint cleaner inspections	94	344	1	439	222,926	2,327	—	332,750	—	—
Green boll inspections	250	680	—	930	—	2,650	—	—	—	—
All-purpose fruit fly (Frick)	—	—	—	—	—	1,690	—	—	—	3,734
Mexican fruit fly (McPhail)	—	—	—	—	—	1,802	—	—	—	1,898
Multipurpose fruit fly (Steiner)	308	1,192	—	1,500	—	1,496	—	—	—	1,848
Oriental fruit fly (Methyl eugenol)	1,174	737	94	2,005	—	417	—	—	—	6,909
Walnut husk fly	—	29	—	29	—	56	—	—	—	776
Sorghum midge	3	8	—	11	2,017	—	—	—	—	—
Satin moth	7	2	—	9	—	58	—	—	—	—
Citrus whitefly	80	197	—	277	—	4,097	14,804	—	—	—
Colorado potato beetle	3	11	—	14	4,281	90	—	—	—	—
Corn borers	29	48	—	77	8,810	334	—	—	—	—
Cucurbit insects	13	28	—	41	3,350	147	—	—	—	—
Japanese beetles	16	249	—	265	—	606	—	—	—	—
Legume forage insects	11	13	—	24	3,135	98	—	—	—	9
Mexican bean beetle	22	26	—	48	9,642	196	—	—	—	1,427
Peach mosaic vector	39	57	42	138	—	965	11,785	—	—	—
Plum curculio	11	18	—	29	1,426	126	567	—	—	—
Rice insects	37	25	—	62	40,460	186	—	—	—	—
Sweetpotato weevil	1	5	—	6	299	22	—	—	—	—
Wheat sawfly	13	50	—	63	38,900	66	—	—	—	—
White-fringed beetle	3	9	—	12	85	128	—	—	—	—
Totals	3,523	4,367	834	8,724	397,645	18,276	27,156	—	—	16,748

new equipment and methods for extracting and detecting pink bollworm larvae during the ginning operation. Eight gin trash machines, loaned by the U.S. Department of Agriculture, operating in all the cotton counties, from Merced to the Mexican border, processed more than 33,000 bushels of trash in 1960.

Lint cleaner inspections were comparable to 1959. In Southern California this work was performed jointly by State and county inspectors while in the San Joaquin Valley the operation was directed by the U.S. Department of Agriculture. Green boll inspections were conducted in all cotton-producing areas of the State, including the counties of San Benito, Merced, Madera, Fresno, Tulare, Kings, Kern, Los Angeles, San Bernardino, Riverside, San Diego and Imperial. County employees performed the major share of this detection assignment.

Japanese Beetle

A state-wide program for detection of *Popillia japonica* Newman, by operation of Japanese beetle traps provided by the U.S. Department of Agriculture, was continued in 1960 and intensified in areas around major commercial and military air terminals receiving aircraft from the East Coast or from foreign countries.

During the Japanese beetle adult flight period the number of traps was increased in and around the Los Angeles and San Francisco International Air Terminals. Moderate increases were made in other vulnerable areas. Despite the approximately 500 adult beetles which were found in arriving jet planes, no Japanese beetles were trapped in California.

Satin Moth

Light trap collections, made by a Plant Quarantine Inspector at the Alturas Inspection Station in Modoc County, revealed satin moth, *Stilpnòtia salicis* (L.), a pest of willow, poplar and aspen trees. Delimitation surveys by the Bureau of Entomology staff and Modoc County Agricultural Commissioner Loring White, resulted in finds in Alturas, Davis Creek, New Pine Creek, Likely, Canby and Perez. The moth was also found at Tullake and at Hornbrook, Siskiyou County.

A subsequent report indicates a 1958 collection at Shasta City, Siskiyou County, as the first record for California. No larvae have been collected in California and no larval damage has been noted.

Sorghum Midge

Contarinia sorghicola (Coq.) was collected for the first time in California by an Agricultural Extension Service official in grain sorghum near Visalia, Tulare County. University of California entomologist J. Davis, suspecting the gnat to be a new pest, notified the Bureau. Delimitation surveys showed the pest present in the counties of Tulare, Kern, Kings, Fresno and Madera. Johnsongrass and all sorghum species and varieties are hosts with local evidence of economic damage to cultivated crops reported.

Peach Mosaic Vector

A state-wide survey for *Eriophyes sidiosus*, the eriophyid mite vector of peach mosaic disease, was made by the Bureau of Entomology and Plant Pathology, U.S. Department of Agriculture, and by several County Departments of Agriculture.

To assure their recognition proficiency the inspection team was trained in infested orchards in Riverside and San Bernardino Counties.

Vector presence was discovered in numerous areas of Riverside County and in backyard peach trees in Fillmore and Ojai, the latter marking the first recorded occurrence of the mite in Ventura County.

The state-wide survey embraced 21 counties, reaching northward through Tehama County. Inspections extended from early April into June. No peach mosaic vectors were found in the San Joaquin and Sacramento Valleys.

Wheat Sawfly

During March and April major effort was directed toward the collection of male specimens necessary to *Pachynematus* species identification. Intensive surveys of wheat and native grasses, extending from the Ojai Valley, Santa Barbara County, to the Antelope Valley, Los Angeles County, revealed larval specimens, possibly this species in the intermediate Frazier Park area.

The host range was extended to include Indian rice grass, *Gryzopsis hymenoides*, in addition to wheat, barley and big squirrel tail grass, *Sitanion jubatum*.

No recurrence of the pest, first found 10 years ago, has been noted in the Cuyamaca Valley since the termination of treatment there in 1958.

Black Walnut Bark Beetle

Pityophthorus juglandis, native to Arizona and New Mexico, was found in 1958

Carzana, Los Angeles County, by a County Agricultural inspector. Surveys during 1960 revealed infestations throughout the San Fernando Valley. All bark covered areas of the host tree are attacked, drought weakened trees being particularly vulnerable.

No evidence of English walnut susceptibility was noted, nor has the pest been found in other Southern California counties.

Drosophila and Nitidulid Survey

The increasing problem of certain insects, vinegar flies (*Drosophilidae*) and sap beetles (*Nitidulidae*), which are produced in a variety of waste agricultural commodities, was brought to the attention of the State Board of Agriculture by an industry group late in 1959. The Bureau of Entomology was assigned the task of assembling pertinent facts on a state-wide basis, the resulting information to be transmitted to an industry-wide committee.

Stemming from certain of the recommendations made in this preliminary report, the Bureau, cooperating with the Bureaus of Vector Control and Food and Drug Inspection of the California Department of Public Health, undertook a field investigation of agricultural waste disposal in the State.

The study of on-farm disposal, nonestablished dumps of agricultural waste and roadside fruit stands was allotted to the Bureau of Entomology to complement collections made by the public health agencies at other types of disposal sites. The result of this investigation was reported back to the State Board and to the Industry Committee.

Bureau inspectors began work the first week of July in three designated districts comprising a total of 28 counties. Southern California was not included as the problem apparently was not acute in the southern counties. The survey covering a period of about 18 weeks, was concluded the first week of November.

The survey was intended as an exploratory and qualitative inquiry into the variety of possible hosts and their distribution within the survey area. No widespread attempt was made at quantitative examination of any breeding media.

Twelve specific crops were sampled wherever found. Several miscellaneous fruits and vegetables suspected of offering a breeding site for the insects were occasionally checked.

Waste on the farms was primarily of two types, cullage due to grading, and produce left in the field after harvest.

Waste disposal methods ranged from dumping in the field, followed at varying intervals by disking, to its use for stock feed.

At over 50 percent of the collection sites no attempt at waste disposal was made to reduce the amount or availability of breeding media.

Differences in attractiveness, suitability or productiveness of the various crops as field breeding media were indicated during these investigations.

The fact that suitable breeding media for these two groups of insects is widespread, abundant and nearly continuous in the great valley and central coast areas was well established by this work.

Over seven man-months of Bureau time went into this survey. County Agricultural Commissioners gave valuable assistance by keeping Bureau inspectors informed of possible collection sites and supplying 27 man-hours of actual field assistance. Over 900 property stops were made in the course of which inspectors gathered 865 collections. These resulted in 1,581 determinations.

Eight species of *Drosophila* and eight species of *Nitidulids* were collected. Of interest was the collection of the dusky sap beetle, *Carpophilus lugubris*, taken for the first time in California. This nitidulid is recorded as a pest of corn in the eastern United States but its status in California is not clear.

The most prevalent and widely distributed species were *Drosophila melanogaster* and *Carpophilus hemipterus*. Both were found in all counties surveyed and were the predominant species present in a large majority of cases.

MISCELLANEOUS SURVEY—DETECTION FINDS

Insect collections representing additional first records for California in 1960 included the following:

1. *Eumegastigmus transvaalensis*—pepper tree seed chalcid—San Diego County, not known elsewhere in the United States.
2. *Agrotis malefida*—a cotton cutworm, Imperial County—common in Arizona and New Mexico.
3. *Clydonopteron tecomae*—pouch-winged moth of trumpet vine—Alameda County—of general distribution in the eastern United States.
4. *Lymire edwardsii*—Edward's wasp moth on Ficus—Los Angeles County nursery—known from the southeastern United States.

5. *Lyctus africanus*—a powder-post beetle in bamboo—Contra Costa County—of foreign origin.

6. *Cataenococcus olivaceus*—yucca mealybug—Los Angeles County nursery—known in other southwestern desert states.

7. *Aceria celtis*—hackberry gall mite—Fresno County—well distributed in the East.

8. *Aceria neocynodonis*—Bermuda grass mite—Imperial County—long known in Arizona.

9. *Pachypsylla* sp.—A hackberry gall psyllid—Fresno County.

10. *Eriophyes* sp.—budmite on bitter cherry—Nevada County—vector of cherry virus in Washington.

Other insect detections of interest included the following:

1. *Rhagoletis completa*—walnut husk fly—found for the first time in Amador County.

2. *Apterona crenulella*—garden bagworm—found for the first time in Modoc County.

3. *Antianthe expansa*—a native treehopper recorded as a pest of tomatoes for the first time in Los Angeles County.

4. *Asterolecanium arabidis*—pit-making scale recorded on new host, creeping sage, in Sonoma County.

5. *Parlatoria oleae*—olive scale—first recorded in Solano County.

6. *Proxenus mindara*—rough-skinned cutworms of widespread and increasing economic importance to strawberries, beets, melons and attacking yams for the first time.

7. *Oxypleurites maxwelli*—olive rust mite—damaging olive blossoms in Tehama County—seriously russets leave in Algeria.

Training

An extensive program of training in insect pest detection and survey was conducted by the Bureau for employees of the various County Departments of Agriculture throughout the State. A total of 22 all-day workshops was presented. Subject matter was given in lecture form and augmented by colored slides, films, pest specimens, traps and other detection and survey equipment. The first workshop was held at Woodland on January 12 and the last one at Merced on March 24. Presentations stressed the distribution, hosts, damage, life history, dissemination and detection time and techniques for each major pest covered. A total of 434 county, State and Federal employees attended these training sessions.

INSECT ERADICATION AND CONTROL PROGRAMS

Oriental Fruit Fly, *Dacus dorsalis* Hendel.

The discovery of a single adult female Oriental fruit fly specimen in a detection program trap at Anaheim, Orange County, on July 29, 1960, was of sweeping significance to the California fruit and vegetable industry.

This dreaded species has long been known in the Orient, the South Pacific area and the State of Hawaii as a major pest of over 200 host crops, many of major importance in our State's agricultural economy. Anaheim find represented the first step toward recovery on the North American Continent.

County, State and Federal forces, equipment and supplies were immediately mobilized and attack plans drawn up to seal off and delimit field infestations and achieve eradication.

Representatives of the County Agricultural Commissioner's office, Bureau of Entomology and Plant Quarantine of the California Department of Agriculture, University of California and United States Department of Agriculture Plant Pest Control and Quarantine Divisions, gathered to discuss organization and program measures and were appointed in advisory board capacity to divide the work, outline procedures, delegate responsibility and to review and evaluate accomplishments.

Orange County was divided into eight districts for survey purposes, 2,400 Steiner traps, baited with the highly-attractive methyl eugenol lure, providing a density of six to 20 traps per square mile. In less than three weeks all the traps were in place and fruit-cutting work and fruit-holding surveys were well underway.

On August 31, 1960, after more than 60 days, an adult male Oriental fruit fly was taken in a Steiner trap one and one-half miles northwest of the July 29 find.

The impact of this recovery led to certain program adjustments. Trap totals were increased to 3,068 with as many as 40 traps per square mile in and around the suspect locations.

Although discovery of the second fly did not positively confirm established infestation, the implications of it were that export of locally grown host material might constitute a threat to other susceptible areas.

As a safeguard, agreements restricting such movement were adopted pending further delimiting surveys.

A van-type trailer and tractor, provided by the U. S. Department of Agriculture, was converted into an 1,100 cubic foot fumigation chamber to serve as a highly mobile emergency unit and as a pilot model in the event infestation developed.

In the meantime other Southern California counties had increased the degree of

ection effort. Particular emphasis was ed on coastal areas of Los Angeles and those parts of Los Angeles, erside, San Diego and San Bernardino nties adjacent to Orange County.

In September 20, 1960, a single female ental fruit fly was trapped at Carpinteria, Santa Barbara County, in the coastal nearly 100 miles north of Anaheim. The nizational plan of the Orange County gram served as a guide for the new ect area, only minor adjustments nec- y.

Within two weeks 1,250 traps had been ed along the Santa Barbara and adjacent tura County coast lines, extending 40 s north and south of Carpinteria.

The off-shore channel island of Santa z was also checked. Again primary host s in central suspect areas were subject ntensive examination.

y mid-October nearly 2,700 traps were peration, providing trap densities rang- from 10 to 40 per square mile.

Every effort was made to determine and ore all avenues of possible fly introduc-

Relationships between garbage collec- equipment, closely associated with the fly recovery, tourist traffic as pertinent e second collection site, and coastal ing facilities, correlated with the third ind, were thoroughly investigated. How- , no positive conclusions as to how the arrived could be reached.

After more than 90 days of negative trap- activity in each area, ranging from y to late December, program activities e concluded. In the Anaheim and Car- eria areas, however, plans were made county employees to maintain six traps square mile during the winter months dling resumption of regular detection op- ons in the spring.

Early 2,000 man-days were given to the -all cooperative program; 1,300 state, county and 100 federal. More than 5,750 s were in service during peak operations nearly 75,000 trap inspections were e. Approximately 34,000 host fruits taken n more than 2,000 properties were exam- . In excess of 66,000 miles were trav- in the course of project activities.

sect collections and identifications ex- led 18,000. The following insects repre- ed 85 percent of all those trapped:

Allograpta obliqua (Syrphidae)
Iridomyrmex humilis (Formicidae)
Minettia flaveola (Lauxaniidae)
Drosophila spp. (Drosophilidae)
Euxesta notata (Otitidae)

6. *Phaenicia sericata* (Calliphoridae)
7. Dried fruit beetles (Nitidulidae)
8. Lacewings (Chrysopidae)
9. Wasps, bees (Hymenoptera)

Mexican Fruit Fly, *Anastrepha ludens*

The Mexican fruit fly protective pro- gram, as for many years, was continued on a basis of fully cooperative federal-state- county participation.

Twelve adult specimens of the fly were taken during late June and July on the Mexican side of the border: 10 in Tijuana and two in Ensenada. Despite these finds, no adult specimens were taken in California. Inspection of local host fruits failed to show any established infestation on either side of the line.

A joint federal-state-county meeting of program participants was held early in the year to adopt program plans for the 1960 season. Federal employees running trap lines were reduced from three to two men. Pro- cedures were modified to eliminate the need for relocating traps from deciduous trees in the fall and the resultant doubling-up of traps at some locations.

Two lures, standard fermenting brown sugar and Staley's Protein Insecticide Bait No. 7, were continued in use. Trap losses resulting from breakage and vandalism aver- aged above five percent.

Protective spray treatments were resumed in southwestern San Diego County in mid-April, but maintained at a lower level of intensity than in the previous year.

With the first positive fly find on June 20, the intensity of spray treatments in Cali- fornia was increased and treatments were started by U.S. Department of Agriculture forces in the Tijuana and Ensenada areas.

Later, when additional positive finds indi- cated greater hazard existed, treatments near the International boundary line were intensi- fied.

Yard and street trees in state and federal areas received up to nine applications of in- secticide. A maximum monthly total of 34,417 trees and 200 acres of canyon shrubs in California, and 35,544 trees in Mexico were under treatment during the July mid- summer peak. Treatments were discontinued by mid-November, a month earlier than during 1959.

Western Cherry Fruit Fly, *Rhagoletis cingu- lata indifferens*

Further extension of cherry fruit fly in- festation, and recurrence in established pro- gram areas, was recorded during 1960. The western side of the coast ranges in Hum-

TABLE II
Survey Operations—Mexican Fruit Fly

	Max. No. traps	Max. props. trapped	Total trap inspections	Total props. visits	No. prop. fruit in
San Diego County.....	300	104	11,330	4,055	—
State Project	1,314	468	61,036	22,622	418
USDA-California	1,625	286	46,068	5,376	769
USDA-Mexico	2,219	1,017	85,810	—	36
Totals	5,458	1,875	204,244	32,053	1,490

TABLE III
Treatment Operations—Mexican Fruit Fly

	Total Trees Treated	Total Property Visits	Acres Brush Treated
State Project	183,298	29,235	850
USDA-Mexico	135,339	25,506	—
Totals	318,637	54,741	850

holdt and Del Norte Counties yielded positive specimens for the first time, while scattered specimens were taken throughout the Humboldt-Siskiyou project area.

At the height of the season 3,006 traps were in operation on 1,785 properties in the Counties of Del Norte, Humboldt, Siskiyou, Trinity and Shasta. Fruit samples, 568 pints, from domestic varieties of cherries, revealed seven new infestations. Three scheduled Diazinon sprays, applied from mid-June to the end of July, were intended to reduce numbers of the insect and to minimize carry-out spread, rather than serve as an eradication level of treatment. During the season 1,015 host trees on 184 properties were sprayed, requiring 6,925 gallons of spray.

Supplementing standard survey and control work, several other avenues of endeavor were explored. Plans for introducing parasites, should the eradication attempt fail, were made in cooperation with the U.S. Department of Agriculture. Specimens of *Phygadeuon weismanni*, a hymenopterous parasite of the European cherry fruit fly, *Rhagoletis cerasi*, will be liberated when supplies are available. A small release of another species, *Opius ferrugineus*, was made on infested native bitter cherry, *Prunus emarginata*. Results of this release will not be apparent for several seasons.

Native bitter cherry and sweet domestic varieties growing in the central Sierra Nevada ranges were carefully explored in an effort to clarify the relationship between cherry fruit fly populations in these hosts. In this area known invasion of domestic cherry fruit has occurred only once in the face of continuing and in many seasons

heavy populations of *R. c. indifferens* in native bitter cherry.

An area of 640 square miles, extending from the Sacramento Valley to the Nevada line, was selected for study. Investigation indicated that *R. c. indifferens* exists wherever its wild host, *Prunus emarginata*, occurs and fruits. *Prunus emarginata* rarely extended below 3,900 feet. Although sites are known where both domestic and bitter cherry occur in close proximity, altitudinal continuity was not evident. This break in the host chain, coupled with numerous records showing that *R. c. indifferens* probably emerges subsequent to the fruiting period, most, if not all, of the domestic varieties may have a bearing on the possible westward movement of the Western cherry fruit fly into the Sacramento Valley.

Climate chamber studies were commenced in cooperation with the University of California. Restricted in scope and thoroughly safeguarded from the quarantine viewpoint the investigations required transportation of *Rhagoletis* pupa from wild hosts outside the quarantined area to the University's Alameda laboratory to be held within narrow temperature limits until late spring at which time they are to be returned to point of collection for emergence.

It is hoped by the Department that some estimate of the species potential for survival and emergence at latitudes in California below its present range will result from this work.

Khapra Beetle, *Trogoderma granarium*

Only two new infestations of Khapra beetle were found in California during 1959 as compared with 47 infestations in 1956, 1957, 15 in 1958 and 8 in 1959. Both of the 1960 finds were "on-farm" properties, making 1960 as the first year since the start of the program in which no distributors of horticultural commodities were found to be infested.

As of December 31, 342 properties in the State, with a total cubic footage of 83,662,200 were recorded as having been infested with

ly one, 400,000 cubic feet, scheduled for fumigation early in 1961, remained as an active infestation.

Eradication surveys continued at a slightly reduced rate, 4,980 man-days expended in the inspection of 15,433 properties resulting in the submission of 9,264 collections for extermination.

The first infestation of the year was found in March, the second in November, an interval of almost eight months of negative survey results intervening.

The number of property inspections required to find each new infestation continued to climb. In 1954 a new infestation was found for each 50 inspections, one for 100 in 1956, one for 2,300 in 1959, while in 1960, 7,716 property inspections were required. These figures lend emphasis to the difficulties inherent in any insect eradication program. In the early days of the program, treatment of infested properties was by far the most costly and time consuming activity. Survey is now predominant.

Six properties were fumigated during the year, three less than in 1959. The cubic footage involved was far less than last year, 832,911 as compared to 2,276,019. Only one of these properties, totaling 50,000 cubic feet, represented a repeat fumigation. Whether a fumigation failure or reinfestation was not determined. Ten thousand pounds of methyl bromide, 5,000 gallons of diesel oil and 300 pounds of malathion were used.

The project was continued on a cooperative basis. The U.S. Department of Agriculture contributed \$105,000; California Department of Agriculture, \$85,000; County Boards of Supervisors through County Agricultural Commissioners, \$30,000; and the University of California at Riverside, \$5,000, for a total annual expenditure of \$225,000. In excess of one million dollars has been required for this work since 1954.

Beet Leafhopper, *Circulifer tenellus*

During the winter of 1959-60 lack of rainfall resulted in sparse annual vegetation over range-land slopes of the western San Joaquin Valley. As a consequence, over-wintering of beet leafhoppers remained scattered throughout the foothill breeding grounds. Because there were no heavy concentrations of the insects, no winter treatments were made.

Winter vegetation dried quickly in the spring, but lasted long enough to hatch a heavy population of beet leafhoppers on the Maricopa Flats, Kern County, and in the

Los Banos Hills, Merced County. Due to the speed of the hatching, and the necessity for prompt action, helicopters and ground rigs were used in the spring spray campaign.

Surveys in crop areas on the valley floor, started in mid-April, revealed that the leafhopper populations adjacent to the foothills were slightly heavier than those of the previous year. The second survey in the Valley in May showed only a slight increase. However, by August a heavy population of leafhoppers and excessive "curly-top" disease damage was found in some of the beet fields from Los Banos through the Tracy area. Damage may be attributed to the scattered hatch throughout the breeding grounds, spring breeding on the floor of the valley which contributed to the population in beet fields, and the prevalence of Virus yellows which makes the beet plant more susceptible to "curly-top" virus.

Surveys during the months of May, June and July in early tomato fields in Tulare, Fresno, Madera and Merced Counties revealed an average of less than one percent "curly-top" damage in each county. Similar conditions were noted in tomato plantings in the Santa Clara, Salinas, San Joaquin and Sacramento Valleys during June and July.

The first mapping of Russian thistle acreage subject to fall spraying was made by helicopter in June and showed 276,240 acres. The second mapping in September showed a total of 194,000 acres, but further drying was anticipated. Aerial treatments by fixed-wing aircraft started October 4 and concluded October 20, spraying a total of 150,198 acres. Because of drift hazards, malathion was substituted for DDT adjacent to cultivated crops. Following the airplane spraying ground rigs were employed in treating scattered patches of Russian thistle.

By the first of November, leafhopper populations were found on brushy perennials in numbers warranting the start of the late fall spraying. By late November, overwintering females had started to move onto canyon slopes where winter annuals had germinated and the fall spraying was concluded.

Russian thistle averaged 62 beet leafhoppers per net sweep for a series of 10 sweeps with some individual counts up to 400 per sweep. Population counts on the perennials ranged from 3 to 27 per sweep. Subsequent checks showed approximately a 98 percent kill for both malathion and DDT. Spray materials were applied at the rate of three-

TABLE IV
Beet Leafhopper Treatments—1960

County	(Spring) Annuals		(Fall) Russian Thistle		(Fall) Perennials and Annuals	Total Acreage
	Helicopter	Ground Rig	Airplane	Ground Rig	and Annuals Ground Rig	
Stanislaus	—	100	—	—	275	375
San Joaquin	—	750	—	—	750	1,500
Merced	3,840	—	—	—	75	3,915
Fresno	—	7,395	18,666	2,160	7,875	36,096
Kings	—	—	22,500	—	—	22,500
Kern	9,736	9,120	96,888	8,995	—	124,739
San Luis Obispo	—	—	12,444	300	—	12,744
Total Acreage	13,576	17,365	150,498	11,455	8,975	201,869

fourths pound of malathion or one pound of DDT in one gallon of diesel oil per acre. During the fall season there were 104,720 acres sprayed with DDT and 66,208 acres sprayed with malathion. Table IV depicts the acreage sprayed during the different spray campaigns.

Russian thistle elimination work extended from mid-May to the end of August. A thistle-free area was obtained from the Altamont Pass in Alameda County to Little Panoche Canyon in Fresno County and in the foothills adjacent to Coalinga. A total of 7,351 man-hours was used to accomplish this work as compared to 6,727 man-hours last season and a maximum of approximately 20,000 man-hours in the past. Over 70,000 acres of rangeland and 2,500 miles of roadside and ditchbank were involved.

Population surveys were made in desert areas of Riverside and Imperial Counties during the winter and spring. The most favorable annuals and the heaviest leafhopper populations were found near Desert Center in Riverside County and on the east side of Imperial County. Winter vegetation in Riverside County dried early and no heavy population of beet leafhoppers hatched. On the east side of Imperial County it was necessary to spray 1,925 acres during the spring. Surveys of susceptible crops in Imperial Valley during the spring and summer showed a negligible amount of "curly-top" damage.

Russian thistle acreage in Riverside and San Bernardino Counties during June and July totaled approximately 12,000 acres, about the same acreage as last season. By October a heavy population of beet leafhoppers had built up here but no migration followed until mid-November. At that time most of the thistle had dried and beet leafhoppers were found on desert perennials

from Indio in Riverside County to Niland in Imperial County. Beet leafhoppers subsequently built up in the beet fields and on annuals that had germinated on the desert floor of the Imperial Valley. Most beet leafhoppers were over-wintering females and in checking the Russian thistle only remnant male populations were found. These findings are indicative that leafhoppers migrate from Russian thistle in Riverside and San Bernardino Counties to the Imperial Valley.

Program measures, costing an average of \$220,000 annually, have successfully prevented recurrence of the five million dollar crop losses which occurred in 1950 and 1951 in the San Joaquin and Imperial Valleys respectively. Average annual disease expectancies of 20 percent have been held to less than one percent each year. It is evident, however, that any relaxation of the effort directed against this disease vector might well lead to production losses comparable to pre-program years.

MISCELLANEOUS ERADICATION—CONTROL PROGRAMS

Spruce Needle Miner, *Taniva albolineana*

The only known occurrence of this insect in California was recorded in 1957 in Modoc County. Through the cooperation of the Bureau and the Modoc County Agricultural Commissioner, an incipient infestation in the City of Alturas was contained. No living specimens have been found since 1958.

Following practices of preceding years, DDT wettable powder and spreader was used to treat 316 trees on 139 properties. Spraying was done in mid-May in contrast to 1959 when unseasonably warm spring weather prescribed earlier April treatment.

Systematic examination of spruce trees outside the infested area is made on a geographical basis, approximately one-half of the County being surveyed each year. Work in 1960 involved the eastern half of Modoc County, including the communities of Cedarville, Lake City and Eagleville in the Surprise Valley, and Highway 395 south from the Oregon border to Alturas. One hundred seventeen (117) trees on 57 properties were checked. No old or active infestations were found.

TABLE V
Insect Identification Totals for 1960

Source	County	State	USDA	Misc.	Totals
General collection	4,083	—	206	—	4,289
General survey	584	3,946	66	—	4,560
Cherry fruit fly survey	61	7,282	—	—	7,343
General fruit fly survey	385	56,716	—	—	57,101
Mapra beetle survey	1,284	4,668	3,312	—	9,264
Pink bollworm survey	10,924	55,171	38,310	—	104,405
Crotophaga survey	—	1,637	—	—	1,637
Line grape insect survey	—	3,123	—	—	3,123
Quarantine	636	3,816	—	—	4,452
Miscellaneous	—	—	—	1,260	1,260
Totals	17,957	136,359	41,894	1,260	197,434

Hall Scale, *Nilotaspis halli*

The Hall Scale Eradication Project, formulated in 1941 by the U. S. Department of Agriculture and the California State Department of Agriculture, had as its objective the locating of all existing infestations in California and the United States and, through prescribed treatment and host removal, the eradication of the insect.

The treatment phase of the program was accomplished on conclusion of the third consecutive fumigation of the last known area of infestation in November 1957. Three negative inspections following the final treatment, completed at the close of 1960, confirmed eradication and brought the program to a close.

During the life of the project, 1941 through 1960, a total of 1,095,498 miscellaneous hosts were inspected on 44,815 properties. Included were all orchard hosts on 4,676 city blocks in the affected areas and adjacent environs. There were 2,960 infested hosts found and tabulated. Hosts treated by HCN fumigation within the infested areas totaled 3,946. There were also 17,784 hosts removed and destroyed in the eight treatment areas of Chico, Oroville and Davis.

Citrus Whitefly, *Dialeurodes citri*

The citrus whitefly infestation discovered in the City of Sacramento in 1958 was treated for the third consecutive year with a spray application of 100 gallons of light-medium oil in 100 gallons of water. A total of 13,400 gallons of spray material was used on 22 infested and 29 buffer city blocks. The discovery of surviving whitefly specimen in 1960 on a single citrus tree will require localized treatments into 1963.

Grasshoppers

Grasshoppers, excepting in a few localized areas, were less troublesome than in past years. Their control, as with other insect and mite pests, presented unusual problems, however, because of increasing restrictions on the use of residual insecticides-miticides. A single cooperative control program was organized this year with Federal participation. Two thousand three hundred (2,300) acres of mountain meadow grazing lands in Riverside County were sprayed with toxaphene or baited.

Mulberry Scale, *Toumeyella liriodendri*

The tuliptree scale, *Toumeyella liriodendri*, is subject to eradication whenever found in the State. With one exception, known infestations have been confined to nurseries where prompt eradication by sprays, fumigation or destruction of the host plants was followed. However, an infestation in the City of

San Jose, Santa Clara County has persisted for several years despite annual spray applications. Many of the infested street trees are 50 to 60 feet in height and present a spray coverage problem. A further complicating factor during 1960 was an extremely late hatch in August. The trees were subsequently sprayed with malathion and oil. Eighty to ninety percent of the crawlers and young scale were killed, most survivors being found underneath large adult scale. Trees were then cut back approximately 30 feet from the ground and again sprayed with a heavy dosage of malathion and oil.

This work has been a cooperative undertaking by the City of San Jose and the Santa Clara Department of Agriculture with the State Department of Agriculture participating in an advisory capacity.

SYSTEMATIC ENTOMOLOGY

The taxonomy laboratory made 197,434 identifications during 1960, a 10 percent increase over 1959 totals, and setting a new record. In 1959 less than one-third of the identification load represented collections resulting from cooperative survey programs whereas this year over two-thirds of the total is assignable to this group. Table No. 5 summarizes identification totals for 1960.

The Bureau of Entomology laboratory maintains special records on economically important species of Arthropods (and Molluscs) concerning which there has been some unusual development or interest. These reports cover first records, extensions in range, outbreaks, new hosts, and other items. About 264 such reports were made in 1960.

Arthropods are generally classified into certain basic taxonomic families. Those families containing species of economic importance are subject to particular taxonomic study in the laboratory so as to provide the most effective service to California agriculture. In grouping the different species referred to in these records, without regard to the number of times a single species was reported, the armored scale family, Diaspididae, was represented by 14 species. The gall mite family, Eriophyidae, was next with 10 species. Third came the fruit flies, Tephritidae, with five. The mealybug family, Pseudococcidae, and the cutworm family, Noctuidae, were fourth with four important species each.

As the taxonomic knowledge of economic insect species gradually progresses, the concepts of species limits frequently change. For example, 25 years ago a considerable population of dried fruit beetles in California was known as *Carpophilus dimidiatus* (Fabr.). It is known that *dimidiatus* is very rare in California, most of the dried fruit beetles of that type submitted during the 1960 fruit insect survey proving to be either *Carpophilus mutilatus* Erichs,

or *C. freemani* Dobson. The distribution of *mutilatus* differs from *freemani* in that *mutilatus* in Northern California has come in from both coastal and valley locations, whereas *freemani* has come only from the central valleys. This change in the status of *dimidiatus* in California makes many of the Bureau's earlier records of that species worthless. Record cards bearing species names which are unmatched by retained museum specimens do not have the status of thoroughly reliable records.

Examples of *Carpophilus lugubris* Murr., came from Yuba County during 1960. At first the Bureau was informed that this species had previously been collected in California in 1937 near Fresno. However, a recheck of the actual Fresno specimens shows that they were *Carpophilus obsoletus* Erich. This fact establishes the Yuba County collection as the first occurrence of *lugubris* in California.

Another example of advancement in the taxonomy of economic insects is illustrated by the pomace flies, *Drosophila* spp. Instead of listing all common *Drosophila* flies as *melanogaster*, they are in the order of their significance *melanogaster* Meigen, *simulans* Sturtevant, and *pseudobscura* Frolowa.

The Bureau is fortunate in receiving several lots of identified specimens during 1960. This material has greatly increased the value of the Bureau's working collection, the most effective tool for the rapid identification of important pests. Such lots have come from the U. S. National Museum, the University of California and the Bureau's systematic entomologists.

COOPERATIVE ECONOMIC INSECT REPORT

The Bureau serves as a clearing house for current information relative to insect conditions and reviews and reports such data under agreement with the U. S. Department of Agriculture for inclusion in the U.S.D.A. Weekly Cooperative Economic Insect Report. Information is regularly received from co-operating county, state and federal agencies, the Agricultural Extension Service, University Experiment Stations, farm groups, agricultural associations, chemical representatives and private individuals.

A monthly report for local release summarizes project activities of the Bureau, insect conditions in each county and other information useful to the agricultural industry.

An annual compilation of the 10 most important insect species attacking California agricultural products is prepared together with one totaling crop losses and control costs attributable to major pest species. Several feature articles in trade journals, as well as newspaper and radio publicity, have been based on this reporting service.

The following insects, based on accumulated statistics, were designated by the Department as those most seriously affecting California fruit and vegetable production in 1960:

1. Corn Earworm
2. Lygus Bugs
3. Mites (all species)
4. Aphids (all species)
5. Cabbage Looper
6. Western yellow-striped armyworm
7. Grape Leafhopper
8. Armyworm
9. Two-spotted Spider Mite
10. Citrus Red Mite

APIARY INSPECTION

The California Crop and Livestock Reporting Services estimate that there are 570,000 honeybee

colonies in the State. Bureau records indicate that 361,082 colonies, or 63.2 percent of the estimate total, were registered with County Agricultural Commissioners during 1960.

Inspection records show a decrease in the number of colonies inspected in 1960 as compared to the previous year's figures. Of 158,847 colonies inspected, 4,760 were found to be diseased with American foulbrood. This total was considerably less than the number of diseased colonies found during the previous season when inspectors found a total of 6,365 colonies diseased with American foulbrood, the highest in 30 years. The incidence of American foulbrood disease among colonies inspected was 2.9 percent about one percent less than that recorded in the previous season.

The disease incidence among the total colony population is around one percent. The disease incidence among colonies inspected usually will be greater than this figure depending upon the number of colonies examined and the manner in which the apiaries are selected for inspection. During an average year inspectors examine only about 25 percent of the total colony population. Apiaries with a disease history receive first attention. Priority is given to colonies requiring certification and to investigating "trouble calls"—such as pesticide damage, public complaints, and requests by beekeepers for assistance.

Inspections were made in all but five of the State's 58 counties. A total of 70 county inspectors participated in this year's program. Of these, 30 were county apiary inspectors, seven were hired seasonal apiary inspectors, and 28 performed "on-call" inspections or assisted the regularly assigned inspectors.

Colonies found to be diseased with American foulbrood were destroyed by burning or were taken under permit to one of five licensed wax-salvage plants operating in the State. These are located in Colton, San Bernardino County; Yorba Linda, Orange County; Fresno, Fresno County; Los Banos, Merced County; and Colusa, Colusa County.

Bee disease samples are diagnosed free of charge when submitted to the Bureau of Entomology by beekeepers or bee inspectors. During the year 30 samples were received for disease determination. American foulbrood was present in 166 of these. European foulbrood was present in 62. Parasitic brood was found in one sample taken in Lake County. Nosema disease was present in nine of the 33 adult bee samples which were received.

One of the most serious problems facing the beekeeping industry is the widespread use of the most highly toxic pesticides. Last January, the California Crop and Livestock Reporting Service was requested to make a special survey in order to determine the extent of honeybee colony losses during the previous season. On that survey the Service estimated that during the 1959 season, California beekeepers lost 6.6 percent of their colonies, approximately 37,000 colonies, due to pesticide, six times the number of colonies attributed to disease. Even greater losses may be attributable to reductions in honey yield from injured, less productive colonies.

Eleven lots of bees and equipment totaling 50 colonies were reported stolen during the season. One lot of 108 colonies was recovered along with the truck which also had been stolen. Apiary brand numbers were registered to 76 beekeepers in 1960. Identification numbers were assigned to 68 beekeepers.

Bureau of Field Crops

HARRY E. SPIRES, *Chief*

VAN P. ENTWISTLE, *Assistant Chief*

The functions of the Bureau of Field Crops are: 1. field crops inspection, 2. commercial feeding stuffs, 3. livestock remedies, 4. grain warehouse inspection, and 5. agricultural (bonded) warehouses.

The work of the Bureau is supported by fees collected for the services performed under the authority of the laws establishing the five functions.

The Bureau of Field Crops maintains offices and laboratories at Sacramento, Stockton, San Francisco, Oakland, Petaluma, Vallejo, Corcoran, Fresno, and Imperial (seasonal), in order to administer the five functions of the Agricultural Code assigned to it.

FIELD CROPS INSPECTION

The decline in the total number of inspections, beginning in 1959, continued into 1960. The lack of export shipments of barley, and a change in rice shipments to Puerto Rico, were the principal factors noted. Shipments of parboiled rice, however, were increased, which helped to slow the decline in inspections.

In November, an inspection point was established at Indio. In December, the first full month of operation, 73 cars were inspected. This expansion of Bureau service is expected to result in a substantial increase of inspection certifications issued in Southern California. Table 1 shows the total certificates issued in the past three years, and Table 2 is a summary of the certificates issued in 1960 by offices.

TABLE 1

Inspection Certificates Issued for the Past Three Years

	1958	1959	1960
1. Grains	63,642	47,752	38,646
Combined rice, beans, hops, and hay	18,759	20,220	14,690
Miscellaneous commodities and services	4,933	4,502	4,521
Totals	87,334	72,474	57,857

TABLE 2

Field Crop Inspection 1960 Number of Certificates Issued

	Grain	Rice, beans, Misc. hops, hay		Total
Corcoran _____	1,612	267	45	1,924
Imperial _____	4,829	2	_____	4,831
Los Angeles _____	1,836	267	915	3,018
Petaluma _____	2,955	28	_____	2,983
Sacramento _____	3,269	776	9,231	13,276
San Francisco _____	3,488	2,795	1,611	7,894
Stockton _____	17,151	187	2,888	20,226
Vallejo _____	3,506	199	_____	3,705
Totals _____	38,646	4,521	14,690	57,857

Commercial Feeding Stuffs

This phase of Bureau work is a regulatory activity. It is entirely supported by the inspection tonnage tax of 4 cents a ton, paid on all sales to a consumer, and by a \$5 license fee for each established place of business manufacturing, selling, or distributing feeds.

Approximately 5.9 million tons of commercial feeds were sold in California during 1960, based on tax collected. It is estimated that over 1 million tons of the total was fed to cattle in custom feed lots.

The total of feed outlets continues to decline even though the volume of feed has increased.

Only 2,476 feed licenses were issued in 1960, as compared to 2,623 in 1959 and 2,698 in 1958.

Due to the tight competitive situation in the feed trade, the number of samples showing deficiencies increased from 14 percent to 17 percent, about 3 percent over last year. Part of the increase was due to a tightening of analytical procedures as to what constituted a deficiency.

Alfalfa products, mineral feeds, and dairy feeds showed the highest percentage of deficiencies. One hearing was held during the year to discuss the violations found. Correction was obtained without court action.

The high interest in pesticide residues at the present time caused the laboratory to put increased emphasis on the analysis

of commercial dairy feeds and individual feed ingredients for chlorinated pesticide hydrocarbon residues.

Of 167 commercial dairy feeds analyzed, only three were found to exceed 0.5 ppm DDT, and none of these three exceeded 0.8 ppm DDT.

Only tomato pomace, almond hulls, and apple pulp were found, at times, to contain chlorinated hydrocarbon residues in sufficient amounts to cause trouble when fed to lactating animals where the milk is to be used for human consumption. Use of these products in dairy feeds has been discontinued. This increased work load has required the full time of a chemist, but it has enabled the Bureau to assure California dairymen that the commercial feeds they use are free from excessive pesticidal residue and that no harmful residues are present in the products used for human consumption. Table 3 lists the major details of the activities in commercial feeding stuffs for the past three years.

TABLE 3
Major Activities in Commercial Feeding Stuffs

Field Activity	1958	1959	1960
Licenses issued as of			
December 31	2,698	2,623	2,476
Calls made by inspectors ..	4,408	3,940	4,150
Lots of feed removed from sale by inspectors	10	7	20
Number of bags removed from sale	3,778	915	6,127
Hearings held in regard to violations	—	—	1
Laboratory Activity			
Reports of inspection and analysis	8,547	8,243	7,838
Vitamin assays	1,230	1,762	1,593
Analyses for inorganic nutrients and miscellaneous properties	2,105	2,086	1,899
Analyses for additives used for growth promotion or disease control	1,381	1,216	1,100
Biological evaluation tests (hen) of cottonseed meals for safety of egg production	249	162	—
Feeding trials (chick and rabbit) in connection with consumer complaint studies	13	14	17
Chlorinated Hydrocarbon residue tests	—	—	354

LIVESTOCK REMEDIES

Activity in this function continued at about the same level as last year. There was a small increase in remedy registrations:

738 in 1960 compared to 674 in 1959; 613 were renewals, and 125 were new registrations.

There was a decrease in hazardous remedy retail licenses, from 632 in 1959 to 608 in 1960.

During the year 242 livestock remedies were analyzed. Since many remedies contain two or more active drug ingredients 494 analyses were made on these 242 samples. Seven were found to be deficient, and corrective action taken.

A number of new drugs are introduced every year, and this puts a constant pressure on the Bureau's chemists to keep abreast of new methods and in order to properly check all products registered.

Grain Warehouse Inspection

Public Grain Warehouses are required to register with the Department each fiscal year. The \$10 fee supports the cost of the registration and the inspection to control insect infestation in stored grain.

At least one inspection is made each year just prior to storage of the new crop, thus insuring no carry-over of insects to be a center of infestation.

The total number of public grain warehouses in the state declined in 1960, to 239 from 246.

Although the total number of warehouses registered was down, the carry-over of grain was higher than the abnormally high carry-over of 1959. However, the number of tons of grain condemned dropped to a new low mark.

All of the condemned grain had been treated to kill insects or had been removed from the warehouses by the end of the year. The following figures summarize the Bureau's public grain warehouse inspection activities for the past three years:

	1958	1959	1960
Tons of grain examined	695,912	901,444	982,593
Tons of grain condemned	1,475	545	419

Agricultural (Bonded) Warehouses

There was no change in the number of Agricultural Warehouses licensed and bonded. With only 10 such warehouses, activity under this service function continues at a low level. Annual inspection is made to verify the actual products stored and the negotiable warehouse receipts issued.

Inspection during the past year revealed no discrepancies.

Bureau of Nursery Service

WILLIAM F. HILTABRAND, Chief

WILLIAM M. MATHER, Assistant Chief

The functions of The Bureau of Nursery Service include the co-ordination and supervision of inspections of nurseries for plant pests, and for enforcement of nursery stock grades and standards laws by county agricultural commissioners, administration of optional registration and certification programs for the inspection and testing of plants for virus diseases and other pests, and the licensing of the sale of nursery stock.

The bureau is self-supporting by fees collected for licenses and from registration and certification programs.

Insect Pest Inspections in Nurseries

The inspection of nurseries for pests is the activity of the county agricultural commissioners. Regular inspections are required to determine compliance with State standards of pest cleanliness, and to detect new pests or pests of limited distribution. Infestations of pests of limited distribution, or of obvious economic importance are eradicated. Surveys for specific pests are conducted in co-operation with the bureau.

A total of 8,440 complete inspections of nurseries were reported by commissioners. In addition, 3,856 partial or re-inspections were recorded. Inspections for specific pests were made in 443 nurseries. A total of 6,723 man hours were required for these combined inspections.

Inspections were made of approximately 15 acres of strawberry nursery stock planted in the state. This is 25 acres less than planted the previous year. Smaller sizes than normal and a low volume of plants per acre caused reduced returns to some growers. All of the strawberry plant growing grounds were sampled for examination for nematodes by laboratory methods. Lemon and root knot nematodes were found in six nurseries.

Inspections were made for virus diseases and virus-like disorders in nurseries that grow deciduous fruit and grape nursery stock. Approximately 672 acres in 78 nurseries were inspected. Symptoms of 12 different virus diseases and four virus-like disorders were found. Roguing was required for peach nursery stock found infected with

calico, mule's ear and stunt. Grapevines with symptoms of fanleaf, leafroll, yellow mosaic and yellow vein were removed from nursery plantings. The result of these inspections not only caused the removal of many diseased plants but frequently diseased stock could be traced to the propagating source and the use of these diseased sources was discontinued.

The bulk of bare root deciduous fruit and nut trees, grapevines and roses was harvested in November and December. Losses from crown gall and nematode infestations were average. Crown gall was still a major pest problem in deciduous fruit tree production. Infections ranging to 85 percent of the trees were found in some growing grounds.

Soil fumigation dosages and procedures recommended for nematode control by University of California nematologists as a basis for origin certification were widely accepted by growers of deciduous fruit and nut trees and grapevines. County agricultural commissioners reported that 15 nurseries treated 272 acres prior to planting the next season's crop in accordance with the recommendations.

Approximately 260 million tomato transplants were grown and shipped from 850 acres in Riverside, Kern and Ventura Counties for planting in tomato producing areas. Fields were inspected for root knot nematodes before and during the time the transplants were harvested and shipped. Methyl bromide soil fumigation has become part of the standard production procedure of many growers. No shipments were reported held for nematode infestations by county agricultural commissioners at destination.

Parlatoria oleae, olive scale, has become less prevalent in many nurseries in San Joaquin Valley counties. Very limited infestations are being found in nurseries as compared to several years ago. The reduction of infestations of this scale is attributed to the work of parasites as well as to improved pest control efforts of nurserymen.

Pests new to the State, or serious pests of limited distribution, are eradicated when found in nurseries to prevent spread to other stock or to other areas.

Birch leaf rust, *Melampsorium betulinum*, was found for the first time in California on birch tree nursery stock. A special survey turned up infestations in 10 nurseries.

Cedar-apple rust, *Gymnosporangium juniperi-virginianae*, was found for the first time in California on junipers in one nursery in Sonoma County.

Pear rust, *Gymnosporangium fuscum*, a disease new to the United States, was found in one nursery in Contra Costa County.

Ten scale insects of serious economic importance were found in one nursery on nursery stock obtained from a private collector.

A total of 74 infestations of 38 different pests requiring clean-up were found in nurseries in 14 counties by county and state inspectors as follows:

Aclerda sp., a scale insect, Marin 1;
Aegeriid larva, new to California, Contra Costa 1;
Acutaspis albopicta, an armored scale, Los Angeles 1;
Aleurotrachelus sp., a new species of white fly, Los Angeles 1;
Aspidiotus destructor, coconut scale, San Francisco 2;
Asterolecanium arabidis, *Pittosporum* pit making scale, Alameda 1, Butte 1, Contra Costa 2, Lake 3, San Mateo 2, Santa Clara 2, Sonoma 4, Yuba 1;
Asterolecanium epidendri, a scale insect, Los Angeles 1;
Bulimulus sp., near *shideanus*, a snail, Los Angeles 1;
Cataenococcus olivaceus, a mealybug, Los Angeles 1, Orange 1;
Clavaspis herculeana, a scale insect, Los Angeles 1;
Diaspis sp., new, a scale insect, Los Angeles 1;
Dinaspis aculeata, a scale insect, Los Angeles 1;
Furcaspis biformis, a scale insect, Los Angeles 1;
Gymnosporangium fuscum, pear rust, Contra Costa 1;
Gymnosporangium juniperi-virginianae, cedar-apple rust, Sonoma 1;
Hemiberlesia palmarum, tropical palm scale, Los Angeles 1;
Howardia biclavata, mining scale, Los Angeles 1, Orange 1;
Ischnaspis longirostris, black thread scale, Los Angeles 1;
Lecanium kunoensis, Kuno scale, Butte 1, Contra Costa 1;
Lyrius edwardsii, Edward's wasp moth, Los Angeles 1;
Mesolecanium sp., a scale insect, Los Angeles 1;
Melampsorium betulinum, Birch leaf rust, San Francisco 2, San Mateo 4, Santa Barbara 1, Santa Clara 1, Sonoma 2;
Mycetaspis sphaerioides, a scale insect, Los Angeles 1;
Parlatoria new sp., a scale insect, Los Angeles 4;
Parlatoria pittospori, *Pittosporum* diaspidid scale, San Diego 1, Sonoma 1;
Pinnaspis strachani, a scale insect, Los Angeles 2;
Phenacaspis cockerelli, a scale insect, Los Angeles 2;

Pseudantonina arundinariae, a mealybug, Marin 1;
Pseudococcus microcirculus, a mealybug, Los Angeles 1;

Pseudoparlatoria parlatorioides, a scale insect, Los Angeles 1;

Pseudococcidae, new sp. of a new genus, a mealybug, Los Angeles 1;

Physokermes piceae, spruce bud scale, Marin 3;

Pulvinaria sp., a scale insect, Los Angeles 1;

Trionymus diminutus, a mealybug, Santa Clara 1;

Velataspis dentata, a scale insect, Los Angeles 1;

Virus diseases:

Mule's ear, San Joaquin 1;

Peach calico, Placer 1;

Peach stunt, Sonoma 1;

Noxious weed pests found in nurseries included: Canada thistle in Contra Costa and Humboldt Counties; Carolina horsenettle, Ventura County; false garlic, Los Angeles and San Bernardino Counties; hoary cress, Santa Clara County; guara, Los Angeles County; quackgrass, Alameda, Contra Costa, Humboldt, Marin, Santa Barbara, Santa Cruz and Siskiyou Counties; white horsenettle, San Bernardino County.

PLANT REGISTRATION AND CERTIFICATION

Cherry trees, grapevines, seed garlic and strawberry propagating stock may be registered when inspected, tested and found free from specific plant pests in accordance with regulations of the Director. Nursery stock propagated from these clean sources under the supervision of the department may be certified. Citrus trees may be registered as propagating sources and avocado nursery stock may be certified.

Cherry trees are inspected and tested for virus diseases. During the 1960 season, there were 15 participants in the program with 132 registered variety trees. The Foundation Plant Materials Service of the University of California maintained 42 registered variety trees and 28 registered seed source trees. Registration of 21 variety trees was cancelled when they were found to be off-type. A total of approximately 100,000 certified cherry trees were harvested. For the first time since the beginning of the program in 1956, cherry growers were able to purchase certified stock in quantity.

A registration and certification program for grapevines inspected and tested for virus diseases was established in 1956. Registered plantings include table, wine and rootstock varieties. Repeated inspection and improved testing procedures used in these registered plantings yielded new information concerning the leafroll virus disease of grapes. It was found to be present in registered stock, necessitating an adjustment in the program to

commodate new scientific information as it is developed. There are now 20 participants with 31 registered propagating source plantings totaling 112 acres. Nursery row plantings for certification produced approximately 300,000 certified vines.

Regulations for California certified seed garlic became effective June 25, 1960. The program is designed to exclude the stem and bulb nematode, *Ditylenchus dipsaci*, from planting stock. This pest is a limiting factor in commercial garlic production in California. Ten growers entered 12 plantings of California Late variety garlic, totaling 28 acres. Approximately 200,000 pounds of seed garlic were produced. Of this, 130,000 pounds were retained by the growers for replanting and the balance was certified for planting in commercial fields.

Strawberry plants may be approved as propagating stock, or may be certified, when inspected and tested for virus diseases and other pests. The regulations governing registration and certification were changed to provide that plants in the program may be limited to varieties or clones that are the best available stock in the industry from a pest cleanliness standpoint. Replacement of propagating stock with clones of a higher standard of pest cleanliness, when such stock is available, may be required. Seven firms participated in the program in the 1959-60 season and entered 33 plant beds totaling 198 acres. Eight of these plant beds comprising 48 acres were rejected for root knot and lesion nematodes. Certified plants of Marshall, Lasata and Shasta varieties totaled 38,719,500. This production is the largest for any one season since the program was first started in 1949.

Citrus trees found free of symptoms of psorosis or scaly bark, a virus disease, may be registered as propagating sources. Selected trees must be of good vigor, free from apparent mutations and free from diseases or other disorders which might obscure psorosis symptoms or make the trees undesirable as root or top stock sources. Indexing to test for virus disease infection may be used as part of the inspection. There are now 173 registered citrus trees in the State. Certification is not included in this program.

Avocado nursery stock may be certified when grown under regulations to protect against infection with *Phytophthora cinnamomi*, a serious fungus disease of avocado trees. The first avocado trees grown

for certification under this program will be marketed in 1961.

Grades and Standards

The enforcement of grades and standards for nursery stock is a function of the county agricultural commissioners. Much of the work is done in conjunction with the inspection of nurseries for plant pests. Whenever nursery stock is sold it is required to be labeled correctly, plainly and legibly as to name and also as to grade-size when required by rules and regulations. Gradesizes have been established for roses, deciduous fruit and almond trees, walnuts, pecans and grapevines. The law also protects against false and misleading advertising and other deceptive practices, including the sale of inferior plants.

Commissioners reported non-compliance notices were issued on 818 lots of incoming nursery stock totaling 181,915 plants. Of the total lots found that did not comply with the law, there were 568 lots with root defects, 79 lots with dead or dying plants and 171 lots not properly labeled. In the previous year 1386 lots were found in violation on inspection of incoming shipments. This sharp reduction is attributed to increased enforcement at origin before shipments were made.

A marked improvement in proper labeling occurred in many counties where enforcement was stressed. The recognition by nurserymen of the value of the orderly arrangement of well-labeled stock as good merchandising practice has aided in enforcement. A number of cases of false and misleading advertising claims were investigated and corrected. Several informal hearings were held by commissioners with assistance from the bureau to obtain compliance with the law.

Licensing

Licenses issued for the sale of nursery stock increased from 7711 in 1958-59 to a new high of 8022 in the fiscal year ending June 30, 1960. The number of sales locations licensed in the past five years is as follows:

Fiscal Year	Sales Locations
1955-56	6,720
1956-57	6,996
1957-58	7,181
1958-59	7,711
1959-60	8,022

The right of one nurseryman to renew a license to sell nursery stock was suspended for 120 days following an administrative hearing called because of violations of laws and regulations relating to the handling and sale of nursery stock.

Intercounty Nursery Stock Certificates

The intercounty nursery stock certificate (pinto tag) program was started in 1943 to permit the movement of nursery stock within the State without inspection at destination. Nurseries meeting strict requirements of pest cleanliness may use the certificates on shipments to 56 of the 58 counties in the State. There were 896 nurseries operating in 1096 locations authorized to use the certificates at the end of the year.

The agreement by county agricultural commissioners to accept intrastate shipments bearing inter-county nursery stock certificates was renewed and approved by the director. The new agreement requires soil fumigation for nematodes on land to be

used for planting deciduous fruit and nut trees, berry plants and grapevines.

Other Services

The Directory of Nurserymen and Others Licensed to Sell Nursery Stock in California together with a summary of agricultural laws pertaining to the nursery business was published and distributed to the nursery trade and other interested persons.

Each year, through the co-operation of nurserymen, a census of fruit and nut trees and grapevines grown is prepared and distributed.

The Crop Reporting Board of the United States Department of Agriculture was assisted in maintaining a correct list of nurserymen in California from which production and value figures were obtained for statistical reports.

Training workshops for county inspectors were held throughout the State. Subjects covered included nursery pests, grades and standards and nursery inspection procedures, and enforcement policies.

Bureau of Plant Pathology

GILBERT L. STOUT, *Chief*

GEORGE E. ALTSTATT, *Assistant Chief*

The work of the Bureau, concerned primarily with the regulatory aspects of plant pathology, is carried on under the provisions of the California Agricultural Code.

An important function of the Bureau is giving technical assistance to other bureaus of the Department and to the County Agricultural Commissioners.

This assistance includes the identification of plant diseases and disease-causing organisms (bacteria, fungi, nematodes, viruses, and parasitic flowering plants), the detection of diseases new to the state, the conduct of surveys in cooperation with the County Departments of Agriculture and other agencies to determine the distribution of specific diseases, and the recommendation of measures for exclusion, quarantine, control, suppression, and eradication of plant diseases.

The Bureau also collaborates with the United States Department of Agriculture, the University of California, and other agencies and industry in projects and problems of mutual interest and concern.

Two diseases, both involving pears, were of particular concern during the year. Pear

decline destroyed an increasing number of trees in orchards in the northern and central parts of the state, and investigations of its cause and effects were intensified.

Pear-juniper rust, caused by a fungus previously unknown in the United States, was found in Contra Costa County.

Pear Decline

Pear decline was first reported in California in 1959 when an estimated 10,000 pear trees were destroyed by the disorder. In 1960 the disease caused the death or debilitation of more than 100,000 additional trees.

Pear decline-affected trees may either wilt and collapse within a few days or remain alive with sparse foliage, a light crop and, in some cases, small fruit. A complete description of the disorder is included in an article entitled "Pear Decline in California," Calif. Dept. Agric. Bull. 49(2): 186-192, 1960.

In August, 1960, Director W. E. Warne appointed a Departmental Pear Decline Task Force to investigate the disease and to recommend what part the Department should

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in solving the problem. Dr. Carl W. Nichols, a bureau plant pathologist, was appointed coordinator of this task force. Other bureau members, including Plant Pathologist Y. Rosenberg, participated in preparation of the data included in the report to Director Warne.

Conclusions reached and recommendations made by the task force included the following: (1) quarantine action would not be a feasible means of control; (2) all responsible public agencies should cooperate in determining the cause of the malady, how it is spread, and what can be done about it; and (3) growers in pear decline distressed areas should be assisted with long-term, low-interest financing.

To coordinate the work of state, federal, and university agencies, Dr. Paul F. Sharp, Director of the University of California Agricultural Experiment Stations, appointed University of California Research Committee on Pear Decline. Dr. Nichols was appointed as the Department's representative to this committee.

The Bureau's pear decline work during 1950 was directed along these lines: (1) processing and microscopic examination of phloem samples, collected by bureau, county, and university personnel from graft unions of pear trees, for diagnostic symptoms of pear decline; (2) working with nurserymen in a search for disease-free propagating stock or replacement of decline-affected orchards; (3) cooperating in a continuing survey of selected pear orchards to maintain up-to-date evaluation of the disorder; and (4) searching for pear decline in areas of the state where it is not yet known to occur.

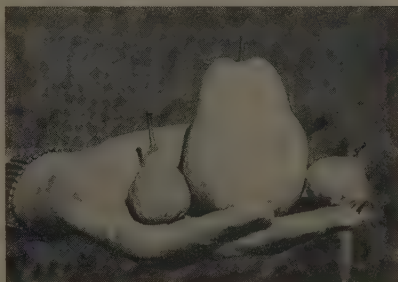
Phloem samples taken from graft unions of 304 pear trees in 14 counties were submitted to the Bureau laboratory for processing and examination. Of the 64 samples from nine counties completed by the end of the year, 18 were diagnosed as positive for pear decline, 10 as probably having pear decline, 10 as indeterminate, seven showed no pear decline symptoms, and 19 were unsuitable for examination.

Among 76,561 pear trees inspected as potential pear propagating wood sources,¹ 2,356 were on interstocks or rootstocks of the Old Home variety. This variety has been recommended as a pear decline-resistant rootstock. However, it was found that about

34 percent of the inspected trees on Old Home interstock or rootstock had symptoms of the bark measles disease in the pear varieties grafted or budded onto the Old Home. This disease is probably virus-caused; symptoms include scaly bark, sparse growth, and reduced yield. Bark measles was observed in the varieties Bartlett, Bosc, Comice, Congress, D'Anjou, Hardy, Lawson, Max Red, and Winter Nelis.

To evaluate the long-term effect of pear decline in California pear orchards, a survey was begun in cooperation with the University of California, County Agricultural Commissioners, and Farm Advisors. Cultural and other data were obtained for 123 pear orchards selected at random from 17 counties. Data on decline symptoms, type of rootstock, and type of interstock, if any, were recorded for about 4 percent of the trees in each orchard. Graft union phloem samples for laboratory diagnosis were collected from some of the inspected trees.

A program for pear decline detection has been conducted in California in cooperation with County Agricultural Commissioners since 1958. The program was continued in 1960 to establish the identity of the disorder in California, and to look for it in those areas of the state where it was not reported in 1959. The counties concerned, properties visited, and trees inspected are reported in the section entitled "Plant Disease Detection." No pear decline was definitely diagnosed in counties in the area of the state south of the north borders of San Luis Obispo and Kern counties, although trees with symptoms somewhat resembling it



Pear fruits picked in an El Dorado County orchard in September, 1960. The large, smooth fruit was taken from a normal-appearing pear tree. The two small, shriveled fruits were taken from a pear tree showing collapse-type symptoms of pear decline.

¹ Most of this work was done by personnel of the project for the development of methodology for nursery stock certification.

were seen in San Luis Obispo, Ventura, and Los Angeles counties, and these trees will be examined further next year.

Soil samples for nematode determination were taken from pear orchards inspected during three years of disease detection work. The nematodes found most frequently in these samples were *Helicotylenchus nannus*, *Paratylenchus* spp., and *Xiphinema americanum*. Other types occasionally encountered were *Cricanemoides* spp., *Helicotylenchus erythrinae*, *Heterodera* spp., *Meloidogyne* spp., *Pratylenchus minyus*, *P. penetrans*, *P. thornei*, *Rotylenchus buxophilus*, and *Trichodorus* spp.

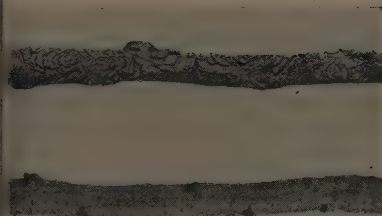
No correlation between pear decline symptoms and nematode populations was apparent.

Plant Disease Detection

The Bureau continued its intensive search for plant diseases new to or of limited occurrence in California, with the cooperation of the County Agricultural Commissioners and, in some instances, federal personnel. The 1960 disease detection program included surveys of 11 selected crops, two types of native plants, and all imported plants currently being held in California for postentry inspection.



Aerial view of a Sacramento County (Natomas District) pear orchard showing pear decline affected trees scattered throughout the orchard. Photograph by courtesy of the Department of Plant Pathology, University of California, Davis.



to Bartlett pear branches: one (upper) with the early bark symptoms of the pear bark measles disease and the other (lower) with normal-appearing bark. Pear bark measles reduces the crop on infected trees and is probably virus-caused. About 50 percent of the pear trees with Old Home rootstocks or interstocks that were inspected in California in 1960 showed measles symptoms. Old Home has been recommended as a pear rootstock because pear trees growing on it apparently do not become affected with pear decline. When obtaining Old Home wood for rootstock propagation, care should be taken to select the wood from trees that are not carrying the factor for pear bark measles.

Crops inspected this year included cherries, corn and grain sorghum, cotton, crucifers, cucurbits, hops, peaches, pears, potatoes, rice, and tomatoes. In addition, native and ornamental oak trees were inspected for the oak wilt disease and native rhododendrons for European rhododendron rust. Neither of these diseases was found. Inspections were made at 1,863 locations in 48 counties, and the plants inspected represented about 148,115 acres (Table 1).

Postentry quarantine inspections, made under the provisions of Federal Nursery Stock, Plant, and Seed Quarantine No. 37, involved 102 lots of plant material imported during 1960, and 102 lots held over from previous years. Fifty-two lots were declared eligible for release during the year, leaving 50 still under quarantine.

Continued state-wide inspections of pear orchards revealed that the pear decline disease had increased in all pear-producing areas north of Kern county. No pear decline was detected in southern California.

Pear-juniper rust, caused by the fungus *Gymnosporangium fuscum* DC., was found on pear foliage in the Lafayette area of Contra Costa county in the fall of 1960.² A

survey of all pear trees in the area, in cooperation with County Agricultural Commissioner A. L. Seeley, revealed rust infection on 28 out of 334 properties inspected. The infected trees were all found within four square miles.

An attempt to eradicate the pear-juniper rust fungus, never before reported in the United States, was begun promptly in cooperation with Commissioner Seeley. Spores produced by the fungus on pear will infect only certain species of juniper, while the junipers are the perennial source of the spores which infect pear. No infection was detected on the thousands of ornamental junipers growing in the area, but all of them were given five preventive spray applications of ziram fungicide at 7- to 10-day intervals. Further control measures are planned for the spring of 1961.

Other plant diseases of more than usual interest investigated during 1960 included:

Clubroot of crucifers, caused by *Plasmodiophora brassicae* Wor., found for the first time in Santa Cruz county in a 70-acre field near Watsonville, and subsequently in one other planting.

The branched broomrape parasite of tomato, *Orobancha ramosa* L., found on 36 new properties in Alameda county, one of them about eight miles from previously known infestations; no new infestations were found in Sacramento and San Joaquin counties.

The potato stem mottle virus, found for the first time on one property in San Luis Obispo county, and on one new property in Kern county.

Symptoms similar to those of the ringspot virus disease of hops, not previously reported in California, found in Mendocino, Sacramento, Sonoma and Sutter counties.

Pratylenchus brachyurus (Godfrey, 1929) Goodey, 1951, the smooth-headed lesion nematode, found on cotton in a new area near Delano, Kern county (See "Plant Nematology").

Plant Disease Suppression And Eradication

The Bureau was concerned in 1960 with suppression or eradication of tristeza (quick decline) of citrus, several virus diseases of peaches and nectarines, and the branched broomrape, *Orobancha ramosa* L. Tristeza (Quick Decline) of Citrus

The work on tristeza included (1) inspecting citrus orchards for the tristeza

² See Plant Disease Reporter 45(2):151, Feb. 15, 1961.

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disease; (2) finding and removing Meyer lemon plants in the Meyer lemon-free districts; and (3) finding and testing Satsuma orange trees for tristeza in these districts so that the infected trees can be removed.

State and county personnel inspected approximately 57,500 acres of oranges in Butte, Fresno, Glenn, Kern, Riverside, San Diego, Santa Barbara, Tulare and Ventura counties. Inspection outside the quarantined area was emphasized to discover incipient infections so that early control measures could be undertaken. Limited inspections were made inside the quarantined area in Southern California, to obtain information on the spread in this area.

No trees showing symptoms of tristeza were found outside the quarantined area, but they continued to appear in large numbers in some quarantined districts.

During 1959, inspections outside the quarantined areas had disclosed the presence of 16 tristeza-diseased trees on a new property near Orosi in Tulare county. These infections appeared to have resulted from topworking the trees with infected scionwood from a block of Washington navels on the same property. Indexing during 1960 of the 276 trees in the source block proved that three were symptomless carriers of tristeza; one was a year-old replant and the other two were mature trees. Investigation showed that the infected replant was part of a 1959 shipment of 910 Frost Nucellar Washington navel orange trees, on Cleopatra mandarin rootstock, which had been grown in the Coachella Valley, outside the quarantined area, and distributed among five growers in Tulare county. Index tests of 113 trees of this shipment showed 51 of them to be infected.

There is no evidence that spread of tristeza by natural means occurs north of the Tehachapi mountains. In every instance where tristeza-infected trees have been detected there by visual inspection, it was found that the trees had become infected by the use of infected scionwood used in topworking them.

Most of the Meyer lemon plants in the Meyer lemon-free districts were found and removed prior to 1959, but a few additional plants were found during 1960. At the end of the year all but one of the 5,104 plants on 3,771 properties in these districts had been removed.

The Satsuma mandarin orange tree testing program was continued to identify trees in

the Meyer lemon-free districts that are symptomless carriers of tristeza. Tests of 2,729 Satsuma trees have been completed and 734 of the trees proved to be infected; 571 of them were in commercial plantings. Tests of some 200 additional Satsuma trees are in progress.

Peach Mosaic

The peach mosaic suppression program, a cooperative federal, state, and county project, involves the finding and removing of mosaic-infected peach and nectarine trees to reduce spread of this virus disease. Between April 11 and June 30, inspections were made of 425,366 peach and nectarine trees (Table 2); 188,397 were inside the peach mosaic quarantined area and 236,969 were outside. A second inspection was made of 104,587 trees inside the area. An additional 13,170 stone fruit host trees were inspected in nursery sales yards and growing grounds inside the area and 469,000 outside. There were 407 mosaic trees found and removed, an increase of 93 over the previous season, due in part to a much higher mosaic incidence in one small district.

Peach mosaic has not been found in California north of the Tehachapi mountains. In addition to the inspections made specifically for peach mosaic (Table 2), inspections for other peach virus diseases, including yellow leaf roll, western X-disease, and yellow bud mosaic, were made in nine central and northern California counties. No peach mosaic was found among the 3,029,709 trees inspected on 1,284 properties.

Yellow Leaf Roll and Western X-Diseases of Peach

The number of peach trees found infected with yellow leaf roll or with western X-disease, closely-related virus diseases, was the smallest since the suppression project was begun in 1950. In 1960, as in 1958, no yellow leaf roll was found in Yuba county, where during the first three years of the project the majority of the infected trees occurred.

Inspections of peach and nectarine orchards in central and northern California by state and county personnel began June 2 and ended September 16. Only 12 trees infected with yellow leaf roll and 66 infected with western X-disease were found (Table 3). All the yellow leaf roll trees and 45 of the western X trees were promptly destroyed under supervision of the County Agricultural Commissioners. The remaining western

trees are to be destroyed before the 1961 growing season.

The entire commercial peach and nectarine acreage in Butte, Colusa, and Sutter counties and in the Bear River district of Placer county was inspected at least once, as was all of Yuba county's commercial acreage except for some relatively young plantings in the Arboga district.

In Butte, Sutter, and Yuba counties, orchards where yellow leaf roll or western X-disease was found in 1960 or within the previous three years, were inspected several times during the season.

Stanislaus county inspections included properties with a previous history of western X-disease and a portion of the orchards not inspected since 1955.

In Tehama county, all commercial peach orchards in the Dairyville-Los Robles-Los Colinos area, and all properties with a previous history of western X-disease, were inspected.

Peach Yellow Bud Mosaic

Peach trees infected with yellow bud mosaic virus were found in Riverside county during 1960 for the first time, making it the twelfth county in California where the disease is known to occur. The state-county co-operative inspections were made in nine counties, starting April 5 and ending June 30, and revealed 115 new tree cases on 11 properties in seven counties (Table 4). No inspections were made in All Dorado, Napa and Nevada counties where the disease had been found in previous years.

In Butte county, all commercial peach and nectarine orchards not previously inspected for yellow bud mosaic were examined, as well as three previously-infected properties and their environs. In addition, the environs of all nursery salesyards and growing grounds in the Gridley district were inspected.

Placer County inspections were confined to the environs of nurseries and growing grounds.

In Riverside county, all peach and nectarine trees in the Cherry Valley district were inspected after 18 infected peach trees were found in a small commercial planting near Beaumont. No additional infected trees were found.

San Bernardino county inspections included the Lytle Creek district and one-third of the peach acreage in the Cucamonga district.

In Solano county, inspections were confined to one previously-infected experimental planting.

In Sutter county, inspections were made of the only known infected orchard and its immediate environs near Live Oak, and of other commercial orchards in the area between Live Oak and Yuba City which had not been inspected before.

In Tehama county, orchards near the yellow bud mosaic quarantine lines in the Antelope and Dairyville districts were inspected. No yellow bud mosaic was found outside the quarantined areas. In Yolo county, inspection was limited to a previously-infected experimental planting near Davis. Yuba county inspections were continued in District 10 on properties not previously inspected for this disease.

In Riverside and San Bernardino counties, where the disease is very limited in distribution, the yellow bud mosaic project is on an eradication basis. All infected trees found in these counties were destroyed under supervision of the agricultural commissioners. In addition, the soil occupied by the 18 infected trees in Riverside county was fumigated with a nematocide, because the virus is soil-borne and is believed to be spread by a nematode vector.

Broomrape

The Bureau, in cooperation with the University of California, County Agricultural Commissioners, and three growers conducted soil fumigation tests on infested tomato land in Alameda, Sacramento and San Joaquin counties to investigate further the feasibility of eradicating branched broomrape (*Orobanche ramosa* L.) from the soil.

Results indicated that branched broomrape can be eradicated from infested land by fumigating the soil with methyl bromide under polyethylene tarpaulins. Plans have been made to fumigate in 1961 the two fields (114 acres) in Sacramento and San Joaquin counties where the broomrape was found in 1959. This will be a state-county-grower project supervised by the Bureau.

METHODOLOGY FOR NURSERY STOCK CERTIFICATION *

The project for developing methods of certifying nursery stocks for freedom from

* For this project state funds were matched with federal funds received from the Agricultural Marketing Service, U.S.D.A., under provisions of the Agricultural Marketing Act of 1946.

detrimental viruses included work on cherries, almonds, peaches and nectarines, plums and prunes, apricots, grapes, pears, apples and quinces.

The work has included close cooperation and exchange of information with members of the U. S. Department of Agriculture, the University of California Agricultural Experiment Station and Extension Service, the County Agricultural Commissioners, the California Department of Agriculture Bureau of Nursery Service, horticulturists, nurserymen, and growers. It was carried on in 26 counties with 49 nurserymen who produce the bulk of the kinds of nursery stock with which this project is concerned. Four field plots, greenhouse facilities, and a nursery plot of the University of California Agricultural Experiment Station were utilized in the indexing and virus identification work.

Cherries

Work with cherries was limited to completing virus index tests of 15 seed source trees and giving assistance to Nursery Service in the inspection and indexing of registered budwood source trees in nursery mother blocks.

Peaches and Nectarines

During 1960, first year readings were made of virus index tests on 35 selected peach and nectarine trees including 21 of the leading peach and nectarine varieties grown in California. If the selected trees pass the two-year index test, progeny trees from them will provide initial registered stock for a proposed peach and nectarine registration and certification program.

Pending the availability of registered propagating sources, preliminary examinations of propagating sources were continued to help nurserymen locate the cleanest currently available sources. These examinations included 33,168 mature peach and nectarine propagating source trees and showed 32,478 to be apparently free of virus infection. Nursery row examinations of 58,242 June-budded trees showed approximately 45,200 to be apparently free of virus infection.

Almonds, Apricots, Plums and Prunes

Services to nurserymen on almonds, apricots, plums, and prunes consisted primarily of making preliminary examination of their propagating source trees. These inspections showed 18,406 of the 18,539 source trees to

be apparently free of virus infection. Preliminary index tests of 235 trees on Shiro-fugen flowering cherry showed that only 111, or 47 percent, were free of viruses detectable by the Shiro-fugen test.

Grape

Recognition of the value of the California program for the registration and certification of grapevines is evident in the increasing demand for certified grapevine nursery stock. The records of the Bureau of Nursery Service show 20 participants in the grape registration and certification program who maintain 12 mother blocks, 14 increase blocks and five nursery-row blocks. During the season, assistance was given to Nursery Service in the examination of 23,603 grapevines in nursery blocks. Only 287 vines were rejected as unfit for propagative purposes.

In a cooperative project involving the Bureaus of Plant Pathology and Nursery Service and the University of California, 763 rootstock source vines from nursery mother blocks are being indexed on indicator vines for the leafroll virus. These tests will be observed and evaluated in 1961.

Pears

The inspection of pear budwood source plantings included 76,561 pear trees, 68,621 of which were nursery row trees. About 3,290 of these trees were found to be unfit for propagative purposes. An additional 33,578 nursery row pear trees not used for propagative sources were examined in an attempt to correlate known pear virus disease symptoms in mature trees with those in nursery row progeny trees.

Virus diseases encountered in the propagative source examinations were vein yellows, red mottle, stony pit, bark measles, and possibly pear mosaic. Bark measles was noted in about 34 percent of 2,536 pear trees with Old Home interstocks.

Apple

Inspections of apple propagative sources included examination of 1,422 mature trees and 64,495 nursery row trees from which the nurseries collect their budwood. On the basis of visible symptoms 79 trees were rejected as unfit for propagative use. Disease symptoms found were those of apple mosaic and flat limb viruses. In an attempt to determine the occurrence of visible virus symptoms in nursery stock an additional 40,470 nursery row trees were examined. Apple mosaic symptoms were the only virus disease symptoms found.

Quince

Quince propagating stock is used principally as a dwarfing rootstock for pear. The practice of propagating quince rootstock by using cuttings from quince nursery row trees previously budded to pear can result in spread of virus diseases. Nurserymen are being encouraged to obtain their cuttings in the future from permanent quince plants which can be inspected and indexed for virus diseases.

Visual examinations were made of 33,515 nursery row trees and 73 mature trees used as propagating sources, and 17 of the latter were regarded as unfit for propagative use.

GENERAL PLANT PATHOLOGY

The general plant pathology laboratories received 4,129 specimens of plants and plant materials in 1960 for disease diagnosis. The Sacramento laboratory examined 2,885 of these, including 291 specimens intercepted at border stations by inspectors of the Bureau of Plant Quarantine, 47 for quick decline of citrus determinations, and 64 for pear decline determinations. The Riverside laboratory handled 1,244 samples, including 637 which were given preliminary processing for the Sacramento nematology laboratory.

Laboratory findings of more than usual interest included:

Birch leaf rust, caused by *Melampsoridium betulinum* (Pers.) Kleb., on white birch stock of 10 nurseries in five coastal counties, and on nine established trees in two of these counties. Infected trees apparently had all originated in the Pacific Northwest except in one nursery where the disease was in a block of locally-produced trees adjacent to imported infected trees. All known infected trees have been treated or destroyed.

Cedar-apple rust, caused by *Gymnosporangium juniperi-virginianae* Schw. on Andorra juniper (*Juniperus horizontalis* Moench var. *plumosa* Rehd.) in a Sonoma County nursery. The trees had been shipped from the midwest in 1959. All infected trees were destroyed.

Southern root rot, caused by *Sclerotium rolfsii* Sacc., on Gazania nursery stock in Los Angeles county and on peony roots shipped from Japan.

Azalea flower blight, caused by *Ovulinia azaleae* Weiss, on azalea nursery stock in San Mateo county.

Pear-juniper rust, caused by *Gymnosporangium fuscum* DC., on pear from several properties in Contra Costa county. A specimen of rust on pear leaves received in 1959 from a property in the same area, and diagnosed at the time as *Gymnosporangium libocedri* (P. Henn.) Kern, has, on re-examination, been determined to be *G. fuscum*. (See Calif. Dept. Agric. Bul. 49 (2): 154, 1959).

Following are tabulations of laboratory specimens based on the type of host plant and the casual factor involved:

Crop category	Number of specimens
Tree fruits, nuts, grapes	1,078
Vegetables	423
Flowers and herbaceous ornamentals	421
Ornamental shrubs and vines	296
Small fruits	285
Forest and shade trees	463
Cereal, forage, and field crops	284
Rootstock identification	57
Preliminary nematode processing	637
Miscellaneous (soil, turf, weeds, etc.)	185
Total	4,129

Causal factor	Number of instances
Fungi	1,319
Bacteria	185
Viruses	178
Parasitic flowering plants	5
Disease or condition not caused by an organism	1,197
Disease-free or negative for specified examination	522
Referred to other bureaus or agencies (insects, chemicals, etc.)	52
Undetermined	68
Total	3,526

PLANT NEMATOLOGY

California's effort to reduce the movement of plant parasitic nematodes in nursery stock took a long step forward in 1960, through initiation of an origin treatment and inspection program for deciduous fruit and nut trees, grapevines, and strawberry plants moving under intercounty nursery stock certificates (see report of the Bureau of Nursery Service). The nematology laboratory examined 464 nematode samples extracted from the roots of nursery stock in connection with this program during the year.

The total number of nematode samples examined by the Bureau laboratory during 1960 was 7,682. About 39% of these represented commercial plantings of vegetable, fruit, or field crops, including 1,416 samples collected in state-wide disease detection surveys.

Approximately 37%, or 2,808, of the specimens examined were collected from nursery salesyards and growing grounds. These included the samples examined for the intercounty certificate program mentioned above, approximately 500 samples from certified and non-certified strawberry nursery plantings, and samples from other types of origin inspection.

A unique feature of agricultural regulatory work in California is the strict inspection of mail and express shipments of plant material, which is a duty of the County

Agricultural Commissioners. As a part of this inspection, most counties are now collecting soil or root samples from the shipments and submitting them to laboratory examination for nematodes. Such samples accounted for 20 percent of the state laboratory's work load, and included 1,258 samples from interstate shipments and 281 from intercounty shipments.

Serious nematode pests which are not commonly found in California were detected in 38 interstate shipments during 1960, and the plant materials involved were destroyed or returned to the shipper. The majority of these rejections were for the presence of *Radopholus similis*, the burrowing nematode, against which a quarantine is in effect. Other serious nematodes found in shipments from other states included *Rotylenchulus reniformis*, the reniform nematode, and *Pratylenchus coffeae* and *P. brachyurus*, two lesion nematodes not generally distributed in the state.

The remaining 4 percent of the nematode samples examined in the state laboratory in Sacramento were collected during inspections of dooryard or home plantings, representing mostly ornamental plants.

The nematology laboratory received assistance from laboratories operated by the county departments of agriculture in 32 counties during 1960. About 65 percent of the samples examined in Sacramento had been given preliminary processing in the county laboratories. The bureau's Riverside laboratory also assisted the nematology work by preliminary processing of 637 soil or root samples.

State personnel spent 24 man-days training or assisting county staffs in nematology techniques in the county laboratories during the year, in addition to time spent instructing county personnel at the Sacramento laboratory.

In the course of a state-wide disease detection survey of cotton, *Pratylenchus brachyurus*, the smooth-headed lesion nematode, was found in a field near Delano in Kern County. Prior to 1960, this nematode

was known to occur only on one property at Shafter in Kern County, one property near Indio in Riverside County, and several properties in the Blythe area of Riverside County. A special survey made subsequently by nematologists, disease detection personnel, and county inspectors of Riverside and Kern counties revealed five new infested properties in the Indio area and one additional property near Delano, indicating that this nematode is more widely distributed than had been suspected within these areas.

The following is a list of the kinds of host plants represented by nematode samples received for laboratory examination:

Crop category	Number of specimens
Tree fruits, nuts, and grapes	2,380
Vegetables	1,410
Flowers and herbaceous ornamentals	1,340
Ornamental shrubs and vines	454
Small fruits	734
Forest and shade trees	240
Cereal, forage, and field crops	570
Soils	494
Miscellaneous (turf, weeds, seeds, etc.)	60
Total	7,682

Plant parasitic nematodes were found and identified in 3,097, or 40.3%, of the 7,682 samples.

TABLE 1
Plant Disease Detection Inspections in 1960

Crop or host plant inspected	Counties	Properties or locations	Crop acres	Trees
Cherries	11	57	636	40,155
Corn and grain				
Sorghum	32	316	28,740	
Cotton	8	267	33,258	
Crucifers	1	11	515	
Cucurbits	13	72	2,804	
Hops	7	27	4,989	
Oaks	34	192	-	654,917
Peaches	4	152	2,086	205,756
Pears	14	98	3,702	399,816
Potatoes	5	18	872	
Rhododendron	6	32	-	1,113
Rice	15	176	51,413	
Tomatoes	22	383	19,100	
Postentry items	21	62	-	
Totals		1,863	148,115	

TABLE 2
Summary, by Counties, of Peach Mosaic Inspections in 1960

County	Inspected		Infected with mosaic		
	Properties	Trees	New properties	Total properties *	New cases (trees)
resno	26	55,641	0	0	0
ings	35	50,575	0	0	0
os Angeles	128	31,486	.0	0	0
ladera	26	39,875	0	0	0
range	88	582	0	0	0
iverside	2,965	95,567	12	80	226
an Bernardino	2,904	73,467	4	58	168
an Diego	103	18,508	1	9	13
ulare	65	59,665	0	0	0
Totals	6,340	425,366	17	147	407

Includes properties on which peach mosaic was found in previous years and having new tree cases in 1960.

TABLE 3
Summary by Counties of Inspections for Peach Yellow Leaf Roll and Western X-disease in 1960

County	Inspected		Infected					
			Yellow leaf roll			Western X-disease		
			Properties	Trees		Properties	Trees	
	Properties	Trees	New	Total ¹	New Cases	New	Total ¹	New Cases
Butte	216	410,773	1	1	6	1	10	14
Colusa	2	6,850	0	0	0	0	0	0
Placer	4	40,687	0	0	0	0	1	1
Stanislaus	152	378,768	0	0	0	5	7	10
Sutter	692	1,580,253	3	5	6	4	24	26
Tehama	29	32,792	0	0	0	1	4	6
Yuba	148	545,618	0	0	0	4	8	9
Totals	1,243	2,995,741	4	6	12	15	54	66

¹ Includes properties infected in previous years and having new tree cases in 1960.

TABLE 4
Summary by Counties of Peach Yellow Bud Mosaic Inspections for 1960

County	Inspected		Infected with Yellow Bud Mosaic		
			New properties	Total properties ¹	New cases (trees)
	Properties	Trees			
Butte	29	79,330	0	1	47
Placer	26	4,664	1	1	3
Riverside	400	22,075	1	1	18
San Bernardino	186	3,025	0	2	3
Colano	1	2,239	0	1	10
Sutter	50	121,672	0	1	26
Tehama	20	24,297 ²	2	4	8
Yolo	1	8,262 ²	0	0	0
Yuba	15	82,171	0	0	0
Totals	728	347,735	4	11	115

¹ Includes some properties infected in previous years and having new tree cases in 1960.

² Includes trees in close-planted nursery rows.



Two-year-old peach orchard—near Modesto.

Bureau of Plant Quarantine

E. A. BREECH, Chief

O. A. VAUGHAN, Assistant Chief

Administration-Quarantine Laws and Regulations

The Bureau of Plant Quarantine is charged with the development and enforcement of quarantine regulations designed to prevent the introduction into, or spread within, California of pests which if established would damage the State's huge agriculture industry.

Authority for the Department's plant quarantine protection program is contained in Sections 100 to 160 of the California Agricultural Code. General provisions of the Code are also pertinent to the functions of the Bureau of Plant Quarantine.

California has issued 22 exterior quarantines against pests in other states, and 15 interior quarantines against pests of limited distribution in California which are enforced by the Bureau. These exterior and interior quarantines were established by the State Director of Agriculture under provisions of the Agricultural Code. The Bureau also enforces twelve federal-domestic quarantines against pests of limited distribution within the United States.

Eighteen federal-foreign regulations are in effect against pests of foreign countries, with six federal quarantines directed against pests which are present in Hawaii and the United States' offshore territories. While these federal quarantines were established by the Secretary of Agriculture under federal law, they are enforced by the Bureau in California under joint federal-state authority.

Bureau Has Four Categories

The work of the Bureau of Plant Quarantine has four categories: (1) administration, which provides over-all direction, planning, and administration of quarantine laws and regulations; (2) border inspection, which is concerned with vehicular traffic entering the State on all major highways; (3) maritime inspection, which is concerned with the inspection of ships and airplanes; and (4) interior inspection, which is concerned with the inspection of freight, ex-

press, parcel post, and truck shipments arriving at interior locations.

Interior inspection is performed primarily by the County Agricultural Commissioners and their staffs, under the general direction of the Bureau of Plant Quarantine.

Changes in Quarantine Regulations

Section 3150 of the California Administrative Code, defining terms used in exterior quarantines, was amended to add definitions to show that "All states and districts of the United States" means the Continental United States (including Alaska), and Hawaii; and "All states, districts, and territories of the United States" means the Continental United States (including Alaska), Hawaii, Guam, Puerto Rico, and the Virgin Islands.

The Citrus Pests Exterior Quarantine was amended to delete the requirement of annual surveys to be made in other states for the possible presence of citrus canker as a condition of admitting citrus fruits into California under permit.

The Elm Tree Diseases Exterior Quarantine was amended to change the scientific name of the disease to *Ceratocystis ulmi*, and to add Kansas to the states infected with Dutch elm disease.

The Sweet Potato Weevil Exterior Quarantine was amended to add or delete certain counties in Georgia, Alabama, Mississippi, and Texas, in which the weevil had been recently found or where the weevil had been eradicated.

The Oak Wilt Disease Exterior Quarantine was amended to change the scientific name of the disease to *Ceratocystis fragacearum*, and to add New York and Oklahoma to the infected area.

The Peach Mosaic Disease Exterior Quarantine was amended to add one county to the area under quarantine in each of the States of Colorado and Texas.

The Plum Curculio and Apple-Blueberry Maggot Exterior Quarantine was amended to prescribe conditions under which apples may be held in controlled atmosphere storage and certified for entry into California.

The Nut Tree Pests Exterior Quarantine was amended to add one county in the State of New Mexico to the area under quarantine.

The list of approved mills and establishments issued supplemental to the regulation titled "Dissemination of Weed Pests Through the Movement of Feed Grain" was amended five times in order to add, delete, or otherwise revise listings of approved mills. The list of counties which have indicated they will accept certificates of cleanliness was revised to add San Benito.

The list of Khapra-beetle infested properties supplementing the Khapra Beetle Interior Quarantine was amended two times early in the year to add four properties and delete one property. The list was repealed on March 9, 1960. The listing was reinstated on December 16, 1960 to designate one infested property.

A regulation was adopted declaring pear decline to be a "pest", and was filed as Section 3551 of the California Administrative Code.

The Pear-Juniper Rust Disease Interior Quarantine was adopted effective December 5, 1960.

The Quick Decline Interior Quarantine was amended twice. All plants belonging to the genus *Fortunella* were added to the list of commodities covered. "Tristeza" was designated as being synonymous with "quick decline". The second amendment extended the quarantine boundary line eastward in Riverside County to take in additional area in the vicinity of Alberhill.

The list of approved mills and establishments issued supplemental to the regulation titled "Seed Screenings and Cleanings" was amended five times in order to add, delete, or otherwise revise listings of approved mills.

The Snail Interior Quarantine was repealed effective July 2, 1960.

The Yellow Bud Mosaic Disease Interior Quarantine was amended to add to the area under quarantine relatively small areas in the vicinity of the towns of Dairyville and Corning in Tehama County.

Border Inspection Service

Eighteen border inspection stations are located on all major highways entering the State. Six along the northern border are located at Alturas, Tulelake, Dorris, Hornbrook, Redwood Highway, and Smith

River; six along the eastern border are Long Valley, Truckee, Meyers, Woodfords, Topaz, and Benton; and the six southern border stations are Yermo, Daggett, Vidal, Blythe, Winterhaven, and Twentynine Palms.

The primary function of border plant quarantine inspection stations is to prevent the introduction of pests which would harm California agriculture. Each vehicle entering the State is subject to inspection to determine that quarantined fruits, plants, plant products, or other restricted items do not enter or that they meet safeguard requirements. The type and degree of inspection given each vehicle is based on the pest hazard it presents.

Total Inspections Increase

Automobile, truck, and bus inspections continue to increase at border stations. The exception was a slight decrease in produce trucks, with 114,769 being inspected in 1960, a decrease of 806 as compared to 1959. These produce trucks were inspected to determine that the loads complied with fruit and vegetable standardization laws. Eighty-six thousand, four hundred thirty of the trucks were outbound, and 28,339 were inbound. In comparison with 1959, this represents an increase of 1,271 outbound produce trucks and a decrease of 2,077 such vehicles inbound.

A total of 4,821,086 cars were inspected in 1960, as compared to 4,711,648 in 1959.

The 1960 total of commercial trucks inspected was 407,107, as compared to 406,107 in 1959.

Bus inspections in 1960 totaled 50,013, a substantial increase over the 1959 figure of 47,401.

The total of California cars inspected decreased 12,136 in comparison to 1959.

There was an increase in out-of-state cars inspected of 121,572.

A total of 13,768,029 passengers entered California through border stations in 1960, in all types of vehicles, an increase of 339,139 over 1959.

Many Pests Intercepted

Eighty-eight thousand, six hundred eighty lots of plant material were intercepted in violation of provisions of the Agricultural Code in 1960. From this vast collection of intercepted material, 27,907 pests were taken as follows: 14,864 lots of insects, 9,927 lots



Tarpaulin fumigation at Winterhaven Plant Quarantine Station of a truck load of grain contaminated with cottonseed. The pink bollworm, a serious cotton pest not known to occur in California, may be carried in cottonseed.

of disease, and 3,116 lots of noxious weed seeds.

The following is a list of some of the more important pests intercepted, and the number of times each was taken in 1960 at plant quarantine inspection stations:

Cotton boll weevil, 16; pink bollworm, 1; citrus whitefly, 23; pecan shuckworm, 110; European corn borer, 43; apple maggot, 301; pecan nut weevil, 26; sweet potato weevil, 4; southwestern cornborer, 4; sugarcane borer, 3; pickleworm, 1; cherry fruit fly, 46; plum gouger, 5; Colorado potato beetle, 2; plum curculio, 198; Canada thistle, 703; quack grass, 147; Carolina horse nettle, 7; white horse nettle, 1874; perennial guara, 2; white top (hoary cress), 7; blue weed, 16; perennial pepper cress, 3.

Many pests not the subject of specific quarantine restrictions would prove to be detrimental to the agricultural industry of the State should they become established in California. Some of the more important of these pests intercepted at border stations were: Yanone scale, lesser snow scale, chaff scale, Forbes scale, coconut scale, coconut armored scale, tea scale, bean leaf beetle, and the black-legged tortoise beetle.

More Feed Grain Inspections

The volume of feed grain entering California by truck through border inspection stations in 1960 showed an increase of 34,644 tons over 1959. A total of 484,326 tons were inspected, including 20,990 tons of

corn; 168,808 of milo; 201,700 tons of wheat, and 4,484 tons of other grains.

Construction Program

The construction program of the Bureau included a new inspection station at Twenty-nine Palms. This is the first station on this highway, necessitated by an increase in traffic as indicated by periodic traffic counts. The station was completed and put into operation in November 1960.

Construction of the new Blythe Station, necessitated by highway realignment, is progressing rapidly. The tentative completion date is May 1, 1961.

Maritime Inspection

Maritime quarantine stations are maintained at seaports, primarily to prevent the introduction of agricultural pests through the inspection of ships and their cargoes from any origin outside of the State of California. Since there are many international air fields near large California seaports, the maritime stations also inspect aircraft, their cargoes, and the possessions of their passengers, from outside the Continental United States.

As collaborators of the Plant Quarantine Division of the United States Department of Agriculture, state maritime plant quarantine inspectors enforce all federal-foreign and domestic quarantines, as well as those directed against pests in the offshore possessions of the United States. They also enforce California exterior quarantines as they apply to material encountered during inspection.

State inspectors staff the major ports of San Diego, San Pedro, and San Francisco.

Ship arrivals at the seaports of Crescent City, Eureka, Stockton, Monterey, San Luis Obispo, Santa Barbara, Ventura, and Hueneme are inspected by the appropriate County Agricultural Commissioner having jurisdiction at the port concerned. Aircraft from foreign areas arriving at military air fields far removed from large seaports are inspected by the Agricultural Commissioner of the county in which the field is located.

10,115 Vessels Inspected

In 1960 at all California ports, 10,155 vessels were inspected, of which 4,610 were found to be carrying material in violation of federal or state plant quarantines.

Aircraft from foreign countries or Hawaii were inspected 5,827 times, an increase of 930 over the previous year; 2,790 of them

carried prohibited material. There were 7,395 overseas airplanes, destined for California, cleared in Hawaii by federal inspectors, eliminating the need for inspection in California, thus effecting a tremendous saving in time and money to the Bureau. Ships and planes carried 34,936 lots of prohibited or restricted material refused entry. There were 3,620 shipments treated as a condition of entry.

There were 176,804 packages of plant material in air cargo from foreign countries inspected in 1960.

Plant pests were intercepted 29,259 times, of which 26,925 were from foreign countries, and 2,334 from other states. Some of the more important pests found were:

From Hawaii—Mediterranean fruit fly, 12; melon fly, 4; Oriental fruit fly, 11; bean butterfly, 16; bean pod borer, 5; green coffee scale, 15; mango seed weevil, 31; burrowing nematode, 4. In aircraft from foreign countries—fruit flies were taken 44 times, including the Oriental fruit fly, 1; Mediterranean fruit fly, 2; Mexican fruit fly, 1; European cherry fruit fly, 1. The rice stem borer was taken 8 times; the avocado seed moth, 4; citrus white fly, 10; miscellaneous white flies, 15; sugarcane borer, 1; avocado seed weevil, 2; green coffee scale, 2; Khapra beetle, 41; Yanone scale, 169; citrus canker, 50; sweet orange scab, 32; citrus black spot, 36; septoria spot, 9; golden nematode, 3; giant African snail, 1. In aircraft from other states—citrus white fly, 3; plum curculio, 1.

During the Japanese beetle flight period from June 15 to August 15, heavy populations were noted on the East Coast. This pest is not established in California. Beetle flights were particularly heavy in the vicinity of the Baltimore and Philadelphia airports. Direct domestic plane flights from these airports in these cities were inspected upon arrival at the San Diego, Los Angeles, and San Francisco airports.

Four hundred and ninety-eight adult beetles were found on the 1,333 planes inspected, of which 211 were alive and 288 dead. Almost all of these beetles were found on jet planes.

Khapra Beetle Found in 23 Ships

Khapra beetle, a destructive pest of stored grain, was found on 23 ships at California ports, either in cargo being discharged or in dry food supplies. In each instance the infested area and materials were treated to eliminate the infestation. In one instance, a complete vessel and its entire cargo were treated.

To meet the various requirements of foreign countries, federal sanitary export certificates were issued at California ports at the



Prohibited entry soil being washed into the Pacific Ocean at San Pedro from machinery returned to the United States from the South Pacific. Foreign soil can carry insects, plant diseases, nematodes and other pests not found in California.

request of exporters to accompany 10,248 shipments of 6,217,829 containers of fruits, vegetables, and plants to foreign destinations.

Foreign meat and animals found aboard ships and planes in 3,922 instances were reported to the Department's Division of Animal Industry, and the U. S. Animal Inspection and Quarantine Division. Permits to remove food stores from ships were issued 576 times.

Garbage retained aboard, or taken from ships and planes, is under surveillance and supervision of plant quarantine inspectors to determine that detention or disposal practices conform with the California Garbage Disposal Law. This law is designed to prevent the introduction of animal and plant pests, such as foot-and-mouth disease in bone or meat scraps, and fruit flies in discarded fruit.

Interior Quarantine Enforcement

Interior quarantine enforcement is carried on by County Agricultural Commissioners and their staffs.

The finding of three adult Oriental fruit flies, *Dacus dorsalis*, in traps in Orange and Santa Barbara Counties resulted in an all-out effort by the Bureau and cooperating agencies to determine if there was an infestation, its extent if established, and prevention of spread to other areas.



County inspector on staff of County Agricultural Commissioner performs inspection of incoming seed at rail terminal.

Since only three flies were taken in traps, it was felt that until it was determined that infestation existed, formal quarantine action would be impractical by California, the federal government, or officials of other states, against agricultural crops which are hosts of this fruit fly. This conclusion proved to be correct.

After meetings of representatives of industry, state, federal, and county departments of agriculture, an informal, voluntary program was adopted after obtaining approval from the officials of other states and the U.S. Department of Agriculture. Industry representatives agreed to divert all shipments of susceptible host commodities to northern markets in the United States where this fruit fly could not sustain itself. In the event a commodity was in demand in a

southern state, that commodity would be fumigated under supervision of a regulatory official. In this manner, adequate safeguards were effected with minimum interference with the usual movement of host materials.

The random sampling of nursery stock for nematodes by County Agricultural Commissioners proved valuable for quarantine purposes this past year. Certified indoor decorative nursery stock shipped from Florida, was found repeatedly, by random sampling, to be infected with burrowing nematode. Florida officials have withheld burrowing nematode certificates from four of the six large suppliers of this material to California. The Florida Department of Agriculture is reorganizing its nematode program and making a complete investigation to clean up the nematode infestation in Florida in order to furnish clean nursery stock.

The random sampling program also has disclosed that some of the nursery stock originating in Texas may be infected with reniform nematode. Reniform nematode is rated as an "A" pest and could be serious should it become established. Also, numerous shipments have been found to contain *Pratylenchus brachyurus*, a pest of cotton and other field crops, which has not heretofore been found on incoming shipments.

The information in the following chart is compiled and presented to show the comparative work load of the various counties. An increased work load was noted in most counties as compared to the workload in 1959.

Plant Quarantine Work Load by Counties
Bureau of Plant Quarantine—California Department of Agriculture—1960

This report is compiled and presented for the purpose of showing quarantine work load by various counties on a comparative basis.

County	INTERSTATE				INTRASTATE			
	Shipments passed	Plants or units passed	Shipments rejected	Plants or units rejected	Shipments passed	Plants or units passed	Shipments rejected	Plants or units rejected
Alameda	15,142	1,723,552	311	13,129	2,890	9,140,255	2	600
Amador	512	12,908	8	13	102	7,933	—	—
Butte	3,228	91,488	63	480	1,524	5,177,908	6	434
Calaveras	504	35,747	1	2	122	15,542	1	3
Colusa	131	47,423	8	8	215	823,912	214	3,410
Contra Costa	5,702	590,868	134	1,717	2,202	597,098	10	162
Del Norte	933	44,101	35	439	256	15,723	3	3
El Dorado	1,086	30,700	5	50	128	16,907	—	—
Fresno	5,957	323,258	238	1,942	5,932	1,587,281	213	356
Glenn	538	30,237	5	11	474	419,579	28	944
Humboldt	3,301	121,599	37	1,223	1,233	414,223	6	1,519
Imperial	5,946	750,111	87	5,447	350	76,808	3	561
Kern	4,812	2,029,968	106	330	2,080	2,998,005	25	89
Kings	695	31,735	20	85	1,099	143,209	35	171
Lake	761	85,916	—	—	101	21,278	—	—
Lassen	523	13,346	4	7	71	5,145	—	—
Los Angeles (Co.)	77,274	6,099,276	2,392	78,839	10,349	25,419,207	169	41,854
*San Pedro (Sta.)	1,181	51,678	1	1	—	—	—	—
Madera	795	23,653	16	518	882	189,595	10	136
Marin	3,528	168,876	41	85	1,027	189,136	—	—
Mendocino	1,881	57,915	12	17	569	113,799	2	2
Merced	1,651	532,290	10	25,048	911	1,017,505	4	6,139
Modoc	597	41,587	—	—	92	40,936	2	3
Monterey	2,810	836,825	143	293	1,028	22,159,951	—	—
Napa	1,003	301,514	20	401	1,268	260,048	10	53
Nevada	560	5,023	—	—	164	2,062	—	—
Orange	7,506	737,634	203	2,943	2,685	10,680,637	3	6
Placer	1,970	261,045	33	1,202	861	1,014,728	2	1,508
Plumas	419	4,036	5	12	43	474	—	—
Riverside	10,647	5,012,217	166	11,356	3,219	2,398,031	57	2,579
Sacramento	12,044	1,238,060	721	22,202	3,590	36,325,747	1	108
San Benito	259	17,443	9	9	112	191,375	—	—
San Bernardino	8,025	432,512	246	2,216	1,929	590,958	35	465
San Diego (Co.)	13,949	538,271	463	5,317	5,391	1,242,551	5	203
*San Diego (Sta.)	858	713,333	7	530	—	—	—	—
San Francisco (Co.)	102	63,094	7	5,044	1,287	358,817	—	—
*San Francisco (Sta.)	78,094	14,838,077	133	4,615	—	—	—	—
San Joaquin	8,376	2,092,717	1,080	19,444	24,107	27,762,306	1,149	25,842
San Luis Obispo	1,732	42,863	46	223	1,117	4,210,498	6	13
San Mateo	6,862	4,795,362	117	14,767	5,462	2,398,007	3	312
Santa Barbara	3,682	433,853	72	138	1,630	9,373,556	5	52
Santa Clara	8,883	1,926,033	313	3,298	2,925	40,832,921	20	765
Santa Cruz	2,574	9,405,930	63	2,059	935	14,036,355	7	246
Shasta	6,037	267,142	30	85	310	128,089	1	10
Siskiyou	2,234	214,818	55	436	228	86,644	7	7
Solano	3,936	199,736	88	182	977	11,671,644	1	1
Sonoma	5,079	969,015	87	154	980	416,069	23	116
Stanislaus	4,686	426,969	66	1,618	7,598	972,954	109	651
Sutter	777	159,221	57	1,240	715	8,793,333	186	4,028
Tehama	1,284	19,028	20	42	421	132,291	—	—
Tulare	2,371	100,319	19	1,193	3,542	1,499,165	7	283
Tuolumne	350	7,196	2	2	142	13,330	—	—
Ventura	3,624	1,610,327	44	4,947	11,048	9,904,938	111	3,112
Yolo	1,851	160,403	14	29	1,307	49,715,497	3	—
Yuba	532	15,558	25	416	419	916,480	1	300
Totals—1960	339,794	60,783,806	7,888	235,804	118,049	306,520,440	2,485	97,046



Celery—near Santa María. Courtesy Stauffer Chemical Co.



Harvesting almond—near Ripon.

Bureau of Rodent and Weed Control and Seed Inspection

ALTER S. BALL, Chief

JAMES W. KOEHLER, Assistant Chief

Weed Control

The vast strides in the field of chemical weed control in the past fifteen years are reflected in recent developments. The advent of 2,4-D in 1944 brought about an increased interest in weed control which in turn caused an abrupt increase in the number of herbicides. This wide array of new materials has made possible several new approaches in controlling some of the State's worst weeds.

Austrian fieldcress *Rorippa austriaca*: A difficult problem in this 25 year old county-state cooperative project in Modoc County locating and treating solitary infestations in the dense meadow vegetation. Modoc County Agricultural Commissioner Loring White redesigned spray equipment in order to obtain a thorough coverage of spot infestations. To measure the progress of the eradication program a departmental weed specialist surveyed and mapped project infestations.

Camelthorn *Albaga camelorum*: In Afton Canyon, San Bernardino County, the county-state camelthorn project progressed satisfactorily. In August, a 5-man survey crew found about 150 plants in 21 locations. Of these, about 90 plants were in two new infestations found along the Mojave River, downstream from the main infestation. Infestations in the communities of Daggett and Pinkley, also treated with 2,4-D, were sprayed in the full bud stage. Field plot trials at Daggett, designed mainly to determine best spray timing in relation to plant growth, were continued. The tests show that the full bud stage is the optimum treating time, and that 4 pounds of 2,4-D per acre, as the low volatile ester, is the most economical rate. Sterilization trials showed trichlorobenzoic acid at 40 pounds per acre gave 100 per cent control when the chemical was leached into the soil with water.

In Riverside County, camelthorn on the county-state project in the Coachella Valley was treated with the emulsive acid form of

2,4-D, except in project area 12, which had been planted to cotton. Twelve plants were found and these effectively treated with carbon bisulphide.

In Imperial County, camelthorn infestations were treated with the amine form of 2,4-D by the county with the exception of the new infestation at Orita Junction. Flooding this infestation for six weeks proved unsatisfactory, but trichlorobenzoic acid and its combination with a borate in a proprietary product, gave good results when leached into the soil with water.

Control measures on the county-state camelthorn project in Kern County included the use of 2,4-D, carbon bisulphide and the sodium arsenite jar method. Reduced infestations involved correspondingly less work.

On the county-state camelthorn project in the Gustine district of Merced County, the area was surveyed by State and county weed control personnel so as to measure future progress more accurately. Infestations were treated with carbon bisulphide.

The Contra Costa County 1¼-acre camelthorn infestation discovered in 1959 near Byron was treated with trichlorobenzoic acid at the rate of 30 pounds per acre. Excellent control was obtained.

Leafy spurge *Euphorbia esula*: In April the Department entered into a three-way agreement with Siskiyou County for the control of leafy spurge, an aggressive perennial weed toxic to livestock. This organized program, which involves private property owner participation, culminates 10 years of chemical field plot trials by departmental weed specialists, and two years survey by State and county weed personnel.

At year's end, work reports from Siskiyou County Agricultural Commissioner Jess R. Grisham showed nearly all of the 138 acre county-wide leafy spurge infestation chemically treated. Ninety-five per cent of the work was completed in the Butte Valley district. In Quartz Valley 90 per cent of



Spraying leafy spurge with 2,4-D on county-state project, Quartz Valley, Siskiyou County.

the infestations were treated. Infestations in Scotts Valley and at Gazelle, totaling only $4\frac{1}{4}$ acres, were in the process of being treated at the end of the calendar year. Much of the acreage was treated in the fall and winter with 2,4-D as a soil sterilant, but on some areas 2,4-D foliar sprays were applied in early season.

Various methods and procedures are scheduled for future years, but ultimate control in the near or intermediate future is not foreseen. Field tests, with other than inorganic sterilants, have shown leafy spurge to be extremely difficult to control.

Puncture vine *Tribulus terrestris*: Controlling puncture vine represents a substantial expense item for many California county departments of agriculture.

In the hope of reducing puncture vine expenses, the Department was requested to explore more economical methods of control. Departmental weed control specialists responded by testing many of the newer

herbicides in widely-separated areas of the State.

Tests were aimed at the use of soil residual chemicals in the winter as a prevention measure, and the employment of foliar sprays in the summer for maintenance control. For prevention of seed germination, Fenac¹ (2,3,6-trichlorophenylacetic acid) applied in the winter or early spring, depending upon the amount of rainfall and soil type, proved extremely effective. A combination of amitrole (amino triazole) and Atrazine² effectively controlled growing plants in the spring and summer.

As a result of the tests, a more economical and satisfactory method was achieved for controlling puncture vine on roadsides and non-crop lands where trees and crop plants are not involved.

Dalmatian toadflax *Linaria dalmatica*: Suppression of Dalmatian toadflax, an undesir-

^{1, 2} Trade name used solely for appropriate identification.

perennial possessing great ability to spread, possibly as great as that of Klamath weed, was begun by Siskiyou County Agricultural Commissioner Jess R. Grisham.

The plant, an escaped garden ornamental, with bright yellow snapdragon-like blossoms, is a serious range pest in Oregon and Washington. In Washington 100,000 acres of valuable range lands are reported infested. The species, characterized by a thick woody rootstock that produces numerous new plants, is a prolific seed producer.

Limited infestations, totaling several acres, exist in the Yreka and Butte Valley districts. A combination foliar spray of amino triazole and Atrazine^a has proven highly effective against the pest.

Halogeton glomeratus: The eight year old three-way halogeton agreement of the Department and Lassen County expired July 1 when the Lassen County Board of Supervisors did not elect to continue the agreement. Halogeton, a weed poisonous to livestock, was first recorded within California boundaries in 1946 when it was discovered in southeastern Lassen County. Limited control by Lassen County started in the following year, was expanded in the subsequent years. At the Sierra Ordnance Depot at Yreka, the United States Army undertook halogeton control in 1951. The California Department of Agriculture entered into a three-way agreement with Lassen County in 1952. During this period the project was further augmented by the United States Bureau of Land Management, which undertook control measures against halogeton infestations on federal lands.

In late 1957, the Lassen County Board of Supervisors, wishing to modify the program for all-out control, asked the Department to consider realignment of the project. As a result of this request, a program of containment was agreed upon. Containment of halogeton in peripheral areas was begun in 1958.

Operations in the two following years resulted in successful containment of the old control areas at a nominal cost of about \$300 a year, one-third of the expense being borne by the Department and two-thirds by Lassen County. However, ranchers in the infested area showed little interest in the project although halogeton is a weed poisonous to livestock.

^a Trade name used solely for appropriate identification.

Relative to other potential halogeton areas in the State, departmental weed specialists conducted halogeton surveys in Mono and Inyo counties. Findings were negative and, so far as is known, halogeton in California is confined to southeastern Lassen County. A close watch is being maintained and in case of spread, action will be taken.

The State Seed Laboratory's "Stored Halogeton Seed Longevity Germination Experiment" is now in its tenth year. In this experiment, stored papery bract seed (black) lost viability after the fourth test year. The indurate bract seed (brown) continued to germinate providing the bracts were removed, and in the ninth year limited germination took place without bract removal.

The test in its tenth year resulted in zero germination from seeds with bracts not removed; but when bracts were removed, 28 percent of the seed germinated. Incidentally, in 1960 germination was 16 percentage points greater than in 1959.

Johnson grass *Sorghum halepense*: Under the Agricultural Conservation Program of the Agricultural Stabilization and Conservation Committee, United States Department of Agriculture, Johnson grass control in northern California counties has greatly expanded. Participating in the 1960 program were Colusa, Glenn, Sacramento, Sutter, Yolo, and Yuba Counties. Designated control areas and ACP payments are subject to the approval of the county agricultural commissioner.

Musk thistle *Carduus nutans*: An infestation of musk thistle, a serious biennial weed, was reported by Agricultural Commissioner Harold A. Crane of San Bernardino County during early summer.

The infestation, aggregating about an acre, was found on a dairy south of Victorville. The county department of agriculture treated most of the infestation with the low volatile ester form of 2,4-D; scattered young plants on the periphery were dug up. The surrounding area was surveyed by county and state weed control personnel.

As far as known, this is the only current infestation in California. The species, primarily a threat to uncultivated areas, such as wild and irrigated pastures and waste lands, spreads rapidly by seed.

Scotch broom *Cytisus scoparius*: The release of 1000 twig borer moths at Georgetown, El Dorado County, on June 7, and 760 of the moths at Petaluma, Solano

County, on June 9 and 10, 1960, launched Scotch broom biological control tests in the United States.

The insect *Leucoptera spartifoliella*, a leaf and stem miner, found in France and other European countries, is a potent enemy of Scotch broom. The adult moth is a beautiful silver-gray insect about one-fourth inch long. The larvae, feeding in the tender growing tips of the Scotch broom plant, stunts vegetative growth and reduces seed production. Credit for arranging the introduction of the insect is due the United States Department of Agriculture and the Department of Biological Control, University of California. The California Department of Agriculture, in cooperation with the U.S.D.A., granted permission for the introduction of the moth. It is hoped that the insect, in its new environment, will readily attack the 100,000 acre California Scotch broom infestation, which involves valuable range and forest lands mainly in the foothills of the Sierra Nevada and Coast Range Mountains of Northern California.

Scotch thistle *Onopordum acanthium*: This robust biennial, a dominant weed of drier meadows and wastelands, recently has demonstrated its aggressive character to such an extent that the species is the object of intensive control in several California counties. Scotch thistle, a native of Eurasia, is recorded from Modoc, Lassen, Siskiyou, and Lake counties. Lassen County infestations, dense in some spots near Adin, are widely scattered near Bieber, Nubieber, and Pittville. Lassen County Agricultural Commissioner Ernest E. Fix sprayed about 64 infested acres using the low volatile ester of 2,4-D plus Diesel oil as a penetrant. Best results were obtained if the plant did not attain a height of over 10 inches.

Across the Lassen-Modoc County boundary at Adin, Modoc County Agricultural Commissioner Loring White initiated an intensive campaign to eradicate Scotch thistle in the region.

Operations during the season resulted in the spraying of aggregate 38 acres, at a cost of \$550.

The Lake County Scotch Thistle infestations, estimated to cover about 5 acres along Kelsey Creek in Cobb Valley one-half mile north of Pine Grove, is being controlled by Lake County Agricultural Commissioner Earl R. Kalar. It is reported that a considerable amount of gravel was hauled from the



Taurian thistle, Butte Valley, Siskiyou County
Infestation sprayed with 2,4-D.

infested area and used as roadbed material in the vicinity of Pine Grove. This area will be kept under surveillance.

Taurian thistle *Onopordum tauricum*: This biennial thistle became the object of a control program when Siskiyou County Agricultural Commissioner Jess R. Grisham began suppression measures in western Butte Valley in late May. Taurian thistle also occurs in Colorado, the only other state from which it is recorded in the United States. The Siskiyou infestation, comprising about four acres, was found at an abandoned ranch headquarters in December 1959. Initial operations show the species difficult to control. Several sprayings with high rates of 2,4-D, as a low volatile ester, were required to kill the larger plants that had already produced flowering stalks. Weed oil added to the 2,4-D spray solution hastened control. A survey of the infested area shows that there has been little spread.

Pest Abatement Districts

The Big Valley Pest Abatement District in Lassen County sprayed 280 acres of hoar cress with 2,4-D. For the control of Russian knapweed, 63 acres were sprayed with 2,4-D. Man-hours for the control of both weeds totaled 283.

The Stronghold Pest Abatement District Modoc County restricted its operations to the control of noxious weeds on private properties within the district. The Tulalake Irrigation District has taken over all weed control operations on the canal banks within the weed district boundaries.

This change has greatly reduced the scope of operations of the weed district.

Summary of Expenditures and Area Treated for Weed Control from Reports of California County Agricultural Commissioners in 1960

County	Acres treated	Miles treated	Dollars
Alameda ¹	951.75	—	\$7,183
Alameda ²	532	2,323	6,922
Alameda	.42	3,065	14,640
Alameda	100.25	1,169	4,710
Alameda ²	1,553.08	3,074	14,370
Alameda	139.38	1,458.35	15,955
Alameda	780.64	65.7	1,678
Alameda	1.5	169.5	531
Alameda ²	257.73	4,328.5	73,652
Alameda	124.5	886	14,084
Alameda	251.49	443.62	15,676
Alameda	219	34.1	664
Alameda	—	—	232
Alameda	3.22	—	4,220
Alameda	515.4	295.75	2,709
Alameda	529.72	6.8	6,315
Alameda	1,119.7	5,078	61,496
Alameda	102.7	6,559.5	23,394
Alameda ¹	208	800	7,534
Alameda	7.06	—	548
Alameda	10.27	4,398.1	35,559
Alameda	433.4	—	5,988

Monterey	9.25	1,315.99	7,072
Napa ²	—	—	4,837
Nevada	—	421.3	2,403
Orange	15,971.75	1,365	28,799
Placer	5.4	—	793
Plumas-Sierra	43.25	388	2,367
Riverside	9,978.77	241	21,376
Sacramento ²	—	36.5	6,655
San Benito	832.8	9,336	10,993
San Bernardino	235.5	43.12	9,002
San Diego	8,401.57	—	27,237
San Joaquin	1,694.65	—	128,105
San Luis Obispo	—	—	22,290
San Mateo	415.71	—	4,289
Santa Barbara	621.88	456.06	19,390
Santa Clara	2,364.5	—	6,089
Santa Cruz	527.73	—	2,125
Shasta	165	399.5	13,157
Siskiyou	548.5	3,071.75	29,236
Solano	501.5	—	13,433
Sonoma	—	—	10,002
Stanislaus	108.85	2,442.25	34,158
Sutter	19.4	3,355	8,226
Tehama	31.3	1,780.8	16,514
Tulare	72.38	—	10,863
Tuolumne	—	752	2,268
Ventura	21.04	—	4,753
Yolo	129	1,285	55,539
Yuba	8	375	5,938

Totals 50,548.94 61,219.19 \$825,969

¹ Plus spot infestations

² Mostly spot treatment

³ Total includes costs of inspection, supervision not prorated

Materials Used

Sodium chlorate	1,910 lbs.
Borax	69,300 lbs.
Borate-chlorate combinations	83,424 lbs.
Borate-monuron combinations	8,512 lbs.
Borate-2,4-D combinations	10,589 lbs.
Petroleum oils	720,515 gals.
Sulphur	9,049 lbs.
Dinitro	1,046 gals.
Carbon bisulphide	56,083 lbs.
Dalapon	15,619 lbs.
Amino triazole	9,556 lbs.
Monuron	5,506 lbs.
Diuron	117 lbs.
Fenuron	3,020 lbs.
Ammonium sulphamate	272 lbs.
Simazine	4,060 lbs.
Benzoic acid	4,702 lbs.
Benzoic acid-borate combinations	4,095 lbs.
Triazine compounds	409 lbs.
Fenac (2,3,6, trichlorophenylacetic acid)	225 lbs.
Erbon	1,468 lbs.
2,4,5-T	1,498 lbs.
Brushkillers	14,337 lbs.
2,4-D amine salts	11,975 lbs.
2,4-D emulsive acid	1,733 lbs.
2,4-D low volatile esters	4,834 lbs.

Plant Pest Detection and Identification

In 1960 a total of 2,084 plant identifications were made by the Bureau, 1,991 in the Sacramento laboratory and 93 in the Los Angeles laboratory. Identifications of material intercepted at the border totaled 201,



Taurian thistle seed head.

of which 47 samples contained viable propagative material of noxious weeds.

The items mentioned below are cited because of unusual occurrence or interest.

Arum italicum was collected on the north bank of the Albion River about five miles east of Little River, Mendocino County. The plants are spreading into an old orchard from an abandoned garden.

Asphaodelus fistulosus, Onion Weed, was received for identification from the Chula Vista area of San Diego County. This record is the second occurrence in San Diego County, but the species is well-established in coastal Santa Barbara County. This annual weed is a serious pest of native pastures in Australia.

Carduus nutans, Musk Thistle, was received from San Bernardino County. This biennial species was growing in an irrigated pasture in Apple Valley about eight miles southeast of Victorville. The growth of the thistle was so dense that the cattle were excluded from an acre of irrigated pasture.

Carduus pycnocephalus, Italian Thistle, was collected in Mariposa County. This species is well-established about the town of Coulterville and occurs in scattered spots near the towns of Mariposa and Mt. Bullion. It originally was collected in the Mt. Bullion area in 1940 and mistakenly reported as *C. tenuiflorus*. *C. pycnocephalus* was also collected in Ventura County in Casitas Pass near the county line.

Chorispora tenella, Purple Mustard, was reported from one mile east of Macdoel, Siskiyou County. This species is not removed by the normal weed control practices in grain and has spread rapidly in Oregon in the past four years.

Cirsium quercetorum, Brownie Thistle, was collected as a roadside weed east of Florin, Sacramento County. This native perennial species was reported as abundant in a pasture in Solano County.

Cytisus racemosus was collected as an escape from cultivation at Carmel Highlands, Monterey County, and Los Altos Hills, Santa Clara County.

Gaura odorata, Scented Gaura, was received from Rodeo Gulch Road, Capitola, Santa Cruz County, the first record of this species in the county.

Gaura sinuata, Wavy-leaf Gaura, was found north of Fresno, the first record of this weedy pest in the San Joaquin Valley.

Ipomoea triloba, an annual species of Morning-Glory, was found in a cotton field near Niland, Imperial County, and in a grapefruit grove near Indio, Riverside County. This species is native to Arizona and Mexico.

Linaria dalmatica, Dalmatian Toadflax, is more widespread in California than first realized. Since the reported collection near Yreka, this species has been collected in Siskiyou County at Mt. Hebron, near Red Rock, and two miles south of Weed. The pest has also been collected in Modoc County, along Lassen Creek where some 30 acres of brushland and creek bottom are heavily infested. This last infestation was reported to be less than an acre in size in 1958.

Onopordum acanthium, Scotch thistle, was collected at the mouth of Indian Creek on the south bank of the Trinity River, about two miles east of Douglas City, Trinity County.

An apparent hybrid of *Sorghum halepense* x *S. virgatum* was collected at the edge of a grapefruit grove north of Indio, Riverside County. Both parental species were present in the immediate area.

Sphaerophysa salsula, Austrian Peaweed, was collected about 1.5 miles northwest of Old River, Kern County. This collection is the first record in this area where it undoubtedly was planted with Turkestan alfalfa seed before 1915. *Alhagi camelorum* has been eradicated from this area; *Centaurea repens* is abundant in this field. All species are known contaminants of alfalfa seed.

Stipa brachychaeta, a perennial Needlegrass native of Argentina, Uruguay, and Chile, was found in an alfalfa field near Camarillo, Ventura County. The only previous record from California is a collection in 1949 near Fresno.

VERTEBRATE PEST CONTROL

Ground Squirrels

The over-all efficiency of the ground squirrel control program designed to reduce damage to agricultural crops is encouraging as the population shows a substantial and persistent decline in most sections of the State.

Control of ground squirrel infestations adjacent to residential areas requires the use of fumigants, anticoagulant bait stations, or trapping as the use of the more toxic baits

is undesirable in the suburban areas. These methods are often costly and time-consuming.

Cooperative squirrel suppression programs with the State Division of Beaches and Parks were conducted in two state parks for reasons of public health directed towards both plague and rabies, to prevent structural and property damage to park facilities, and to prevent the spread of squirrels to adjacent agricultural lands. The suppression programs were highly successful, bringing gratifying results to all concerned.

Control of Disease-Bearing Rodents

The control of field rodents for the suppression of disease transmissible to humans was continued at about the same level as in previous years. This control program is performed as a public health service in cooperation with the State Department of Public Health and the county departments of agriculture.

Orange County discontinued its cooperative county-state plague agreement during 1960 as control operations had satisfactorily reduced the ground squirrel population.

Gophers

Gophers continue to be a major problem to the farmers and ranchers throughout the State.

The mechanical gopher-bait applicator, a new idea in pocket gopher control, has been very effective. Models of this mechanical baiter have been successfully demonstrated throughout the State in a cooperative effort of the Agricultural Extension Service and the County Departments of Agriculture. State Department of Agriculture personnel assisted by preparing toxic baits at various strengths for testing and evaluating results of control. The mechanical baiter is designed to construct an artificial burrow at a controlled depth and to bait with toxic grain in the same operation. The amount of time, labor and cost per acre is greatly reduced with mechanical bait application.

Nutria

The decrease in the number of nutria-holding permits being issued is significant of the general trend throughout the past three years. During the 1958-1959 fiscal year 24 permits to hold nutria were issued while, during the first half of the fiscal year 1960-1961, only 218 nutria breeders obtained permits. An Alameda County breeder

was summoned by the district attorney for a hearing for failure to obtain a permit to raise nutria. Escaped nutria were reported from the counties of El Dorado, Lake, Los Angeles, and Tulare. A total of 42 nutria were captured by Lake County Agricultural Commissioner Earl R. Kalar at the mouth of Cole Creek, which empties into Clear Lake at Clear Lake State Park. Most of the animals were quite tame, which may indicate that they were released just prior to their discovery. In Tulare County one escape was reported. The nutria was captured and destroyed. Periodic trapping has continued in the Snelling area of Merced County where feral nutria were caught in 1958 but none were taken this year. Ten feral nutria were trapped in two locations in San Diego County, nine in the Grossmont area and one in a gravel pit in the San Diego River bottom. Ten nutria were trapped at the Griffith Park Zoo in Los Angeles County.

Microtus

Meadow mice continue to be at a low level throughout the major portion of the State, with only minor localized population build-up. These build-ups result from ideal habitat in conjunction with abundant food supply. Minor microtus problems were reported in the counties of Napa, Santa Clara, Humboldt, Stanislaus, Kern, Sacramento and Solano. The counties of Monterey and Santa Cruz reported damage to artichokes. Good control was obtained with grain baits.

A cooperative study to evaluate the effectiveness of baiting for microtus control with the Modoc County low volume rodent baiting machine was undertaken by Dr. W. E. Howard, Field Station Administration, and M. E. Cummings, Agricultural Extension Service, University of California at Davis, in cooperation with Sacramento County Department of Agriculture and the State Department of Agriculture. It was determined that on alfalfa fields in the delta area of Sacramento County, 2 ounces of 1080 to 100 pounds of oat groats gave effective control at a rate of 10 pounds per acre. Trapping data and field observations indicate that one ounce of 1080 bait mixture applied at 10 pounds per acre does not equal the 2 ounce rate in results.

Undomesticated Burros

During the year 206 permits were issued to capture 397 burros for use as pets or beasts of burden. Twenty permittees re-

ported that they had captured a total of 31 burros.

BIRD DEPREDATIONS

Blackbirds *Agelaius phoeniceus* and *Agelaius tricolor*: Both species are the main bird pests attacking milo and rice crops in the Sacramento, San Joaquin and Imperial Valleys. Other crops reported damaged by blackbirds are cereal grains, sunflowers, lettuce, almonds, peppers, sweet corn and cabbage. A total of 265,644 acres of agricultural crops were reported as receiving various degrees of damage. The blackbird problem is of particular concern to the cattle feed yard operators. Thousands of birds feed daily in the yards, littering the feed and consuming tons of it annually throughout the State. Present control methods have given temporary relief in localized areas, but effective control has not been achieved.

Horned Larks *Otocoris alpestris*: These birds continue to be a problem in Monterey County, although the problem is not as serious as last year. In the Central Valley control was carried on in normal fashion during the year. Special efforts were made in the Tehachapi area of Kern County to assist growers in protecting sugar beet seedlings.

Goldfinch *Spinus spp*: A Ventura County flower seed producer reported that these birds caused an estimated loss of \$16,000 to his flower seed crop.

Starlings *Sturnus vulgaris*: Nesting birds in limited numbers have been observed in counties throughout the Sacramento and San Joaquin Valleys, as well as in Southern California. The resident population remains relatively small as compared with the number of birds present as winter migrants. The pattern of migration remains unchanged with large flocks appearing in the State after the first part of October and continuing throughout the next five or six months.

Bureau personnel, in cooperation with county agricultural commissioners, are making studies of movements, feeding and roosting patterns in order to develop a control program. Reports of minor damage to field crops, orchards and vineyards have come from Kern and Tulare counties. Feed consumption, filth and general nuisance are reported as damage from livestock feeding yards.

Lewis Woodpecker *Asyndesmus lewis*: Control by gunfire in an apple orchard in Shasta County resulted in the killing of

about 100 birds and relief from damage. Control methods did not eliminate the birds, but relieved the problem until the apples were picked.

Ravens *Corvus corax sinuatus*: Sheep ranchers in Humboldt County claimed that ravens were responsible for a number of deaths of newborn lambs. One rancher in the Bear River region reported he lost 30 to 40 lambs. Few reports of such depredations are received.

Yellow-billed Magpies *Pica nuttalli*: Control of yellow-billed magpies was continued during 1960 in Merced County. Control operations were carried on in most of the area adjacent to the course of the Merced River from the Snelling Highway to the Milliken Bridge, a distance of approximately 15 miles and comprising 9,600 acres. In the Gustine area, approximately 4500 acres were under control; Los Banos, 1500; Delhi, Ballico and Hilmar areas, 3500 acres, a total of 19,100 acres given crop protection. Fifty-eight property owners cooperated in the program. Sixteen of the owners listed crop losses at \$96,977 whereas 42 listed losses in percentages to which a monetary value was not attached. The control program during 1960 commenced in January and continued through August with most of the work being done in May.

Linnets *Carpodacus mexicanus*: This widely spread species caused damage to orchards, vineyards and some field crops throughout the State, necessitating localized control. Many of the vineyards and deciduous fruit orchards suffered heavy losses, the damage consisting of disbudding in the early spring and eating and pecking maturing fruits, grapes and berries, rendering them of no value.

English Sparrow *Passer domesticus*: Calla lily blooms valued at about \$700 were lost in the Muir Woods area of Marin County as a result of sparrows lighting on the lilies and scarring the blossoms with their claws, making them unmarketable. Damage to young bedding plants was attributed primarily to sparrows in a Richmond nursery in Contra Costa County. Due to damage to chrysanthemums by sparrows in the Half Moon Bay area, control methods were started. In Sonoma and Humboldt counties sparrow control was carried on around milk farms. The sparrows not only consume and contaminate the milk food, but they are believed to carry certain diseases to which

ink are susceptible. The sparrow continues to be a problem to deciduous fruit growers and to poultry raisers, with a considerable amount of control work being done to protect their interests. The sparrow population does not appear to be vanishing.

The following tabulation shows the extent of economic rodent control from reports of county agricultural commissioners in 1960:

Pest Animal	Acres Treated
Ground Squirrels	4,665,015
Choppers	68,508 ⁽¹⁾
Meadow Mice	6,053
Jack Rabbits	30,658 ⁽²⁾
Garage Rats	22,781
Moles	405
Miscellaneous	64 ⁽³⁾
Total	4,793,484
Rats	6,098 premises

⁽¹⁾ Plus 246 premises.

⁽²⁾ Plus 33 premises.

⁽³⁾ Plus 18 premises.

Pounds of Bait and Fumigants Used

Sodium fluoroacetate	204,488 pounds
Strychnine	110,826 pounds
Thallium sulphate	3,566 pounds
Calc phosphide	65,432 pounds
Anticoagulants	51,735 pounds
Carbon bisulphide	157,849 pounds
Ethyl bromide	7,139 pounds

In addition, 1,506 ounces of strychnine alkaloid and 196,312 jute waste balls were used.

Total cost of economic rodent and bird control for the year was \$520,306 of which \$412,059 was expended for ground squirrel control.

In areas where rodents harbor diseases, the following operations were carried on in cooperation with the counties involved:

Area treated	{ 696,527 acres
	311 premises
Strychnine bait	7,880 pounds
Thallium sulphate bait	4,052 pounds
Calc phosphide bait	5,954 pounds
Sodium fluoroacetate (1080) bait	22,795 pounds
Anticoagulant bait	7,724 pounds
Ethyl bromide	10,447 pounds
Ethyl bromide	1,883 pounds
Jute waste balls	2,230 pounds

Total cost of plague operations for the year: \$87,882.

The following tabulation denotes bird control work carried on in the State from reports of county agricultural commissioners for 1960:

Bird Species	Number premises	Strychnine bait pounds
Blackbirds	199	1,813
Horned Larks	158	6,911
Crows	101	961
Linnetts	895	8,856
English Sparrows	1,163	7,103
Crowned Sparrows	353	975
Yellow-billed Magpies	78	58
Miscellaneous and not designated	249	347
	3,196	27,025

Total cost of bird control operations for the year: \$19,061.

PREDATORY ANIMAL CONTROL

(In co-operation with the Bureau of Sport Fisheries and Wildlife, U. S. Department of the Interior)

In the fiscal year 1959-1960, the Predatory Animal Control program received financial support and contracts with 37 counties, the Tehama Predator Association and the Grazing Advisory Board of San Bernardino and Inyo counties and the U. S. Army. In the last quarter of the year, the State Department of Fish and Game entered into an agreement with the Bureau of Sport Fisheries and Wildlife to provide \$25,400 for predator control work in areas designated by the Commission. This work, primarily for deer management purposes, was scheduled for Trinity, Plumas, and Lake counties and the eastern part of Fresno and Tulare counties.

During the past fiscal year 9,344 coyotes, 3,664 bobcats and 23 mountain lions and 127 bears were taken by cooperative personnel. In addition 14,361 small predators were accounted for during the year. The total catch for the year was 1,559 animals more than was taken in 1959 with about the same number of trappers employed. This increase was

TABLE 1
Predators Taken by Cooperating Agencies

	Coyote	Bobcat	Bear	Mt. lion	Badger	Fox	Opossum	Porcupine	Raccoon	Skunk	Total
State of											
California	4,223	1,182	24	1	371	1,135	342	535	811	681	9,305
Counties	4,199	1,991	95	11	556	2,496	714	234	1,725	2,246	14,267
Federal	706	432	7	11	188	522	465	219	262	525	3,337
Other	216	59	1	0	18	133	3	45	110	25	610
Totals	9,344	3,664	127	23	1,133	4,286	1,524	1,033	2,908	3,477	27,519

due, in part, to continued high predatory animal populations in some areas.

The large number of small animals taken resulted from attention given to rabies suppression. Imperial County was under an emergency quarantine from November 14, 1959, to June 30, 1960. Pasteur treatment was given to 104 people in Imperial County, and 15 animals, excluding dogs, were destroyed because of rabies. In Mexicali, Mexico, 380 people underwent the Pasteur treatment and 27 dogs were known to be rabid.

For the fiscal year ending June 30, 1961, 36 cooperating counties appropriated \$267,464.37 for predator control. The Tehama Predator Association appropriated \$14,760. The San Bernardino, Mono and Inyo County Grazing Advisory Board appropriated \$3,900. An appropriation of \$7,226 was made by the U. S. Army for predator control on some of its installations along the Coast. The State Department of Fish and Game appropriated \$25,400 for control work in designated areas.

SEED INSPECTION

A series of nineteen seed inspection workshops were held to instruct county personnel in the techniques of seed inspection. Two hundred sixty-five county employees attended these in-service training meetings. The programs consisted of seed law interpretations, inspection and sampling techniques, processing of samples at the State seed laboratory, tolerances and legal procedures.

The trust fund agreement with the California Crop Improvement Association was continued. The fund provides for departmental supervision of the regulatory phases of seed certification performed by the various county agricultural commissioners.

Lettuce Mosaic Testing

Twenty-seven official samples of lettuce seed were tested for mosaic content during the year in a leased greenhouse. These official samples were planted to obtain at least 3000 seedlings from each of the lots of seed evaluated. All samples except one were found to be labeled in compliance as to mosaic content. The one lot of seed in violation was labeled as containing "less than 1/30 of 1 per cent mosaic" whereas the official test found 0.38 per cent.

Field Work

During the year, 1,936 official seed samples were drawn. This represents an in-

crease of 17 per cent over 1959. The samples represented 1,337 lots of agricultural seed and 599 lots of vegetable seed submitted by 41 county agricultural commissioners.

Two hundred ninety-three, or 22 per cent, of the lots of agricultural seed sampled were in violation of the California Seed Law in the following respects:

Tests	Mislabeled	Not labeled
Germination	105	8
Purity	56	11
Inert matter	57	4
Name	27	20
Weed seed	31	4
Other crop	20	4
Kind	5	13
Date of test	1	11
Sum of germination and hard seed percentages	11	—
"Treated seed"	—	1
Warranty Clause	1	—

Fifty-six, or 9 per cent, of the lots of vegetable seed sampled were in violation of the California Seed Law in the following respects:

	Mislabeled	Not labeled
Germination	29	13
"Below Standard"	—	24
Date of test	—	20
Variety	—	5
"Treated seed"	—	3
"Certified"	3	—
Kind	—	3
Name and address of vendor	—	2
Test outdated	1	—

There were 1,376 "Stop-sale" orders issued during 1960 for the following violations:

Germination test outdated	970
Unlabeled	153
Mislabeled	110
Incompletely labeled	106
"Treated seed" mislabeled	28
Contained primary noxious weed seed	9
Not conspicuously labeled	7
Misleading advertisement	6

Cooperating with the United States Department of Agriculture during 1960, the seed laboratory tested 896 samples of imported seed requiring 1,764 tests for the Federal Government. Two hundred forty other Federal samples required 412 tests. This is an increase of one per cent in the number of samples tested and 2.4 per cent in the number of tests made in comparison with the 1959 calendar year. In addition, 20 weed and other crop seed samples were received and identified for laboratories in the other Western states.

State and county personnel submitted samples representing 11 lots of seed suspected of having been shipped in interstate

commerce in violation of the Federal Seed Act. No action was justified regarding 3 of these lots. Letters of warning were issued to the shipper of five lots by Federal authorities and at the end of the year action was pending on three lots. Prosecution proceedings were instituted against the shipper for shipments represented by 17 samples submitted during 1959.

Federal-State Seed Laboratory

The seed laboratory experienced a busy year again, due to the increase in the official

sampling program reported above. The total number of service and certification samples declined during the year.

Fees and Tests

Fees amounting to \$30,578.25 were collected on 1,594 service and 2,843 certification samples. A decrease of approximately 7 per cent in revenue was due to a drop in the certification samples and tests.

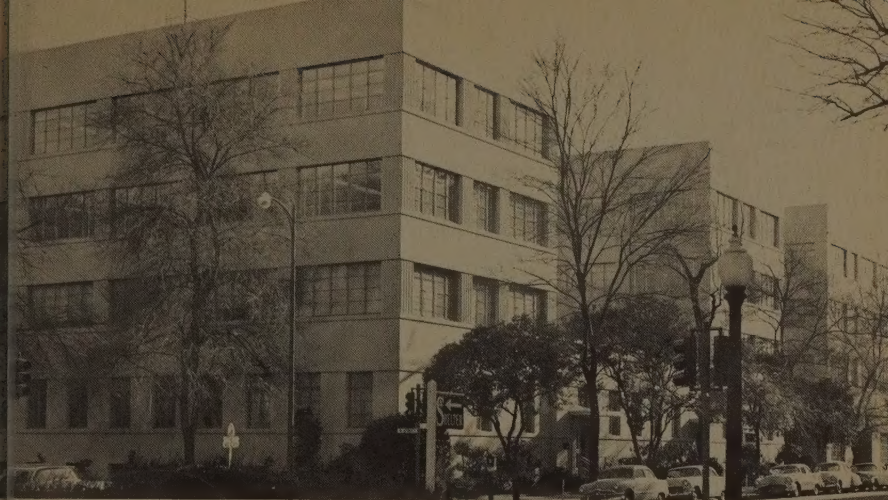
Table 2 summarizes the work, exclusive of federal testing, by the state seed laboratories in 1960.

TABLE 2

	Number of samples	Purity	Germination	Identi- fication	Noxious weed seed examinations	Total tests
SACRAMENTO LABORATORY						
Official (California Seed Law)						
Agricultural Seed	1,329	1,356	1,354	0	0	2,710
Vegetable seed	607	0	607	0	0	607
Service samples	1,594	298	1,566	0	347	2,211
California Crop Improvement Assn.	2,843	2,336	2,527	0	186	5,049
Investigational	1,088	121	1,095	0	6	1,222
Bureau of Plant Quarantine	382	0	0	0	382	382
Quarantine (County Commissioners)	355	0	0	0	355	355
Identifications	83	0	0	83	0	83
Total for Sacramento laboratory	8,281	4,111	7,149	83	1,276	12,619
SAN ANGELES LABORATORY *						
Quarantine samples						
County agricultural commissioners	1,391	—	—	54	1,337	1,391
Grand totals	9,672	4,111	7,149	137	2,613	14,010

Identifications and noxious weed seed examinations are the only tests made at this laboratory.

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California Department of Agriculture Building, 1220 "N" Street, Sacramento

CALIFORNIA DEPARTMENT OF AGRICULTURE

DIRECTOR'S OFFICE

Director	Chas. Paul
Chief Deputy Director	W. J. Kuhrt
Deputy Director	Chas. V. Dick
Assistant Director	Dr. A. G. Boyd
Assistant to the Director	D. A. Weinland
Administrative Adviser	M. R. Peattie
Economic Adviser	Dr. E. W. Braun
Information Officer	Merle Hussong

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Chief	R. S. Long
Fiscal Officer	C. H. Perkins
Supervisor, Office Services	Anne Marie Boyd
Personnel Officer	Chas. P. Cusick

BUREAU OF CHEMISTRY

Chief	R. Z. Rollins
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REGIONAL COORDINATORS

Los Angeles	J. B. Steinweden
Sacramento	Romain Young
San Francisco	C. H. Kinsley

FIELD OPERATIONS

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Chief	Dr. J. E. Stuart
Dairy Service	
Chief	O. A. Ghiggaile
Assistant Chief	A. E. Reynolds
Livestock Disease Control	
Chief	Dr. H. W. Wixom
Assistant Chief	Dr. E. F. Chastain
Meat Inspection	
Chief	Dr. R. W. McFarland
Assistant Chief	Dr. G. W. Yeager
Poultry Inspection	
Chief	Dr. L. E. Bartelt
Assistant Chief	Dr. H. W. Staggs

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Dairy Council of California	
Manager	W. B. Woodburn
Assistant Manager	G. F. Aughinbaugh
Milk Stabilization	
Chief (Acting)	L. C. Schafer
Assistant Chief	

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Chief	Max K. Johnson
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Markets	
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Assistant Chief	S. M. Mather
Plant Pathology	
Chief	Gilbert L. Stout
Assistant Chief	George E. Altstatt
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Chief	E. A. Breech
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Rodent, Weed and Seed Services	
Chief	W. S. Ball
Assistant Chief	J. W. Koehler

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Field Crops	
Chief	H. E. Spire
Assistant Chief	V. P. Entwistle
Fruit and Vegetable Standardization	
Chief	S. R. Whipple
Assistant Chief	J. T. Miller
Shipping Point Inspection	
Chief	H. W. Peterson
Assistant Chief	P. V. Stay

CALIFORNIA COUNTY AGRICULTURAL COMMISSIONERS

Alameda	Edward K. Strobbridge, Jr., 226 14th St., Oakland
Amador	Leland Brown, Courthouse, Jackson
Butte	Donald J. Black, 316 Nelson Ave., Oroville
Calaveras	W. B. Andahl, P. O. Box 848, San Andreas
Colusa	Vacancy, 751 Fremont St., Colusa
Contra Costa	A. L. Seeley, Buchanan Field, Concord
Del Norte	L. J. Garrett, Jr., Washington Blvd. near Airport Entrance, Crescent City
El Dorado	Edio P. Delfino, Government Center, Placerville
Fresno	L. D. McCorkindale, 1730 South Maple Ave., Fresno
Glenn	P. V. Harrigan, Memorial Bldg., Willows
Humboldt	W. Donald Thomas, 5630 South Broadway, Eureka
Imperial	Claude M. Finnell, Courthouse, El Centro
Kern	C. Seldon Morley, 2610 M St., Bakersfield
Kings	Claude W. Bridges, 280 11 1/2 Ave., Hanford
Lake	Earl R. Kalar, Route 1, Box 315-C, Kelseyville
Lassen	Ernest E. Fix, Veterans' Memorial Bldg., Susanville
Los Angeles	Harold J. Ryan, Ninth Floor, 808 N. Spring St., Los Angeles
Madera	Howard T. McLean, 221 West 7th St., Madera
Marin	Richard T. Straw, 519 4th St., San Rafael
Mendocino	Theodore Eriksen, Jr., P. O. Box 353, Ukiah
Merced	Rex C. Lyndall, 740 West 22d St., Merced
Modoc	Loring White, County Office Bldg., Alturas
Monterey	Peter A. Kantor, 120 Wilgart Way (P. O. Box 1370), Salinas
Napa	Gene Cornett, 1436 Polk Street, Napa
Nevada	John W. Phillips, Memorial Building, Grass Valley
Orange	William Fitch, 1010 South Harbor Blvd., Anaheim
Placer	William H. Wilson, 356 Elm Ave., Auburn
Plumas	Neil A. Overgaard, Plumas County Fair Grounds, Quincy
Riverside	Robert M. Howie, 4060 Orange St., Riverside
Sacramento	Forrest H. Darby, 4351 Power Inn Road, Sacramento
San Benito	John H. Edmondson, 3220 Southside Road, Hollister
San Bernardino	Harold A. Crane, 566 Lugo Ave., San Bernardino
San Diego	Dean F. Palmer, 4005 Rosecrans St., Bldg. 2, San Diego
San Francisco	R. L. Bozzini, Agric. Bldg., Embarcadero at Mission, San Francisco
San Joaquin	Austin E. Mahoney, 1868 E. Hazelton Ave., Stockton
San Luis Obispo	Thos. Chalmers, 1025 Palm St., San Luis Obispo
San Mateo	Victor A. Canavese, Agric. Bldg., Chestnut and Heller, Redwood City
Santa Barbara	Walter S. Cummings, County Office Bldg., Santa Barbara
Santa Clara	David T. Rayner, 75 West St. James St., San Jose
Santa Cruz	Matt Mello, 1430 Freedom Blvd., Watsonville
Shasta	C. Bruce Wade, County Office Bldg., 1835 Placer St., Redding
Sierra	Neil A. Overgaard, Plumas County Fair Grounds, Quincy
Siskiyou	Jess R. Grisham, Courthouse Annex, Yreka
Solano	Geo. A. Pohl, Library Bldg., Fairfield
Sonoma	Percy F. Wright, Room 402, 2555 Mendocino Ave., Santa Rosa
Stanislaus	Milo M. Schrock, Corner Scenic and Old Oakdale Roads, Modesto
Sutter	W. A. Greene, Jr., 142 Garden Way, Yuba City
Tehama	S. T. Ancell, Agricultural Bldg., Red Bluff
Tulare	Elvin O. Mankins, Courthouse, Room 12-E, Visalia
Tuolumne	Edward J. Bigelow, 9 North Washington St., Sonora
Ventura	Chester J. Barrett, 815 Santa Barbara St., Santa Paula
Yolo	Chas. H. Hardy, 70 Cottonwood St., Woodland
Yuba	Arthur W. Worledge, 1420 I St., Marysville

The following counties have no agricultural commissioner:

Alpine, Inyo, Mariposa, Mono, Trinity.